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PENNY WISDOM.

THE AMERICAN RUBBER INDUSTRY, with its vastly increasing interests, may well view with grave concern the proposal in Congress to economize through a 28 per cent reduction in the appropriation for the upkeep of the Bureau of Foreign and Domestic Commerce and the Bureau of Standards. Very valuable has been the service of the former bureau in aiding in the development of this country's manufacturing industries and in extending their markets at home and abroad, not only by gathering, with the aid of trained experts, a great amount of helpful information, but also in actively directing through commercial attachés in other lands the speedy and profitable distribution of American products. So, too, have the functions of the other bureau been of great aid in establishing standards for scientific investigations, engineering, manufacturing, interstate and international trade, and educational institutions.

Reduced resources for those agencies would mean curtailment of the scope and volume of their work, impaired usefulness of the bureaus, and the consequent handicap that American manufacturers must suffer in trying to cope with powerful rivals overseas for a fair share of the world's post-war trade.

American business men know far better than politicians how quickly war-worn countries are being regenerated and how many obstacles this country must surmount if the United States is to hold its own in foreign commerce under conditions profoundly changed by the Great Conflict. They know only too well that if our industries are to flourish we must develop foreign trade as well as meet the needs of our home market. In other words, domestic stability and national growth are vitally dependent upon steady, increasing international commerce.

Congress cannot shirk its plain duty to fairly aid American enterprise; and it is incumbent not only upon rubber manufacturers, but upon those in all other lines to protest against such false economy and to demand of the Government not only for themselves but for the American people the aid and consideration that other governments only too gladly offer as a reward for their industry and to enhance their prosperity.

CLEAN RUBBER AT THE SOURCE.

CLEANING RUBBER at the source of production was a project that once attracted considerable attention and was also successfully and profitably accomplished, although in a small way. When only wild rubber was available some process was needed, for washed and dried rubber in the manufactory showed an average loss of 40 per cent for African, 30 per cent for Centrals, and 20 per cent for Parás. The "loss" was chiefly dirt and water and presumably could just as well be removed before shipment as after.

It, therefore, was natural that small cleansing plants should be erected on the African coast; in Central and South America. They were never very successful nor generally patronized. The main reason was, that there was always the feeling that rubber should be gathered in a cleanly manner and not need further cleansing, and furthermore, a multiplicity of grades gave greater profit to those alert in substitution.

With the advent of plantation rubber the problem solved itself. Almost at once clean dry rubber ready for "breaking down" was on the market in great quantities. Scrap and earth rubber were cleaned at the plantation factories.

To show what an advance this is, one has only to imagine plantation rubber as showing 20 per cent shrinkage. If this were the case American rubber manufacturers would pay freight upon 30,000 tons or more of water and dirt plus the costs of extraction.

Other suggestions for doing some of the initial work at the source are massing and compounding. The former is not viewed with favor as the plantation identity is lost and massed rubber is likely to perish in transit. As for compounding that has been done experimentally, both by adding sulphur and fillers to latex and in the usual manner. In neither case was it found practical.

So far, therefore, cleansing at the source is the only rubber process that has been transplanted from the factory to the forest.

A CENSUS FOR SAFETY.

THIS BEING CENSUS YEAR, it is fitting that the rubber trade, thinking along with the Government, should have a census of its own. Thus, the plan of the Rubber Section of the National Safety Council, to secure a census of accidents in the rubber industry is not only timely but of the greatest importance. The facts thus gathered, classified and analyzed by a committee made up of practical men from the big rubber plants, will result in prompt remedies, in new safety appliances, and in a marked lessening of accidents.

Much has been done in the past to make rubber factories safe to the worker. But regrettable accidents still occur. It is so in every great industry. In our United States 80,000 fatal accidents occur in factory and home annually. Of these the rubber trade has its share. And it is to this safety census that we look with confidence for a good measure of relief.

IT KILLED THE PAPER SOLE.

THAT IS WHAT THE RUBBER LEATHER SOLE did for mankind. When leather was the only substance that shod foot bottoms, anything that looked like it was used. Sole leather veneers backed up with rags, strawboard—any cheap filler that could be obtained was used, and the novice bought and repented. But with the advent of the rubber leather sole, the producers of leather and near-leather woke up. Their business was jeopardized. They had forfeited the confidence of the great shoe-wearing public, and the paper sole disappeared. Not only that, but the very best that the leather man could produce was put into soles. Furthermore, thousands of dollars were put into frantic advertising of certain best makes. Thus rubber did a great service, and best of all the rubber sole won for itself a place, from which no policy, no advertising appropriation can evict it.

KANSAS STRIKES AT GENERAL STRIKES.

THE STATE COURT OF INDUSTRIAL RELATIONS established in Kansas is urged upon other states by Governor Allen, who says:

> "Any minority which has secured control of a product upon which human life depends, and which undertakes, for the purpose of affecting wages or profits, to withhold that product from the public until the public shall freeze or starve, has, in effect, superseded government and has arrogated to itself the control of the destinies of human life which government alone may have the power to safeguard."

This is plain talk and foreshadows the day when no clique, either of labor or capital, will have it in its power to paralyze industry.

In this connection, the report of the Second Industrial Conference which is now in the hands of President Wilson is of great interest. This takes a firm stand against "collective bargaining," holding that individual plants should settle their own labor problems.

Of further interest and of much significance is the action of certain large cities that have declared themselves as wholly "open shop" communities.

All of the above point to a cessation of labor struggles and fewer strikes.

TIRE PRODUCTION FOR 1920.

PROPHETS, of course, are as fallible as those who do not venture opinions. Furthermore, the major part of prophesies fail. There are two lines of forecast however, that have gone far beyond the wildest hazards; the production of crude rubber and the annual increase in tire production. As to the later, estimates vary rather widely. Based upon the figures of a well-known automobile man, one of the directors of the Motor and Accessory Manufacturers' Association, 1920 will see 51,500,000 tires produced. A statistician of the "Boston News Bureau," basing his figures upon facts furnished by the Firestone Tire & Rubber Co., predicts 72,000,000 tires. This, however, may not be possible because of scarcity of fabrics. Experts state that the present spindle capacity is 150,000,000 pounds of fabric, enough for 40,000,000 tires, which would suggest more spindles or use of some other fiber in tire building.

LUDWIG C. A. K. MARTENS, RUSSIAN SOVIET REPRESENTATIVE, recently published a long list of American firms who were "anxious to do business" through him with Russia. Among the names were certain large rubber companies. A protest was promptly filed with the Senate Foreign Relations Committee by whom an examination is being conducted and Martens conceded that "they (the companies in question) have been solicited to sell goods and have not sought orders."

It may be of interest in this connection to state that a very cleverly written article from Soviet headquarters was sent to THE INDIA RUBBER WORLD months ago, describing Russian markets and the millions to be spent in America. It was not published.

FORMER PREMIER CLEMENCEAU of France announces that he is tired of politics and is going to the deserts of Africa to "seek a fortune in rubber." It seems that one of his compatriots has discovered a new process of refining the gum of the *Eucalyptus,* and that is to be exploited. Frankly, we wish he wouldn't. He is too good and too great to be wasted upon a hopeless quest. If only he would take up a big tract of land and plant cotton, that would help the world, the rubber trade, and himself. But to-day wild rubber from any minor producer does not spell success.

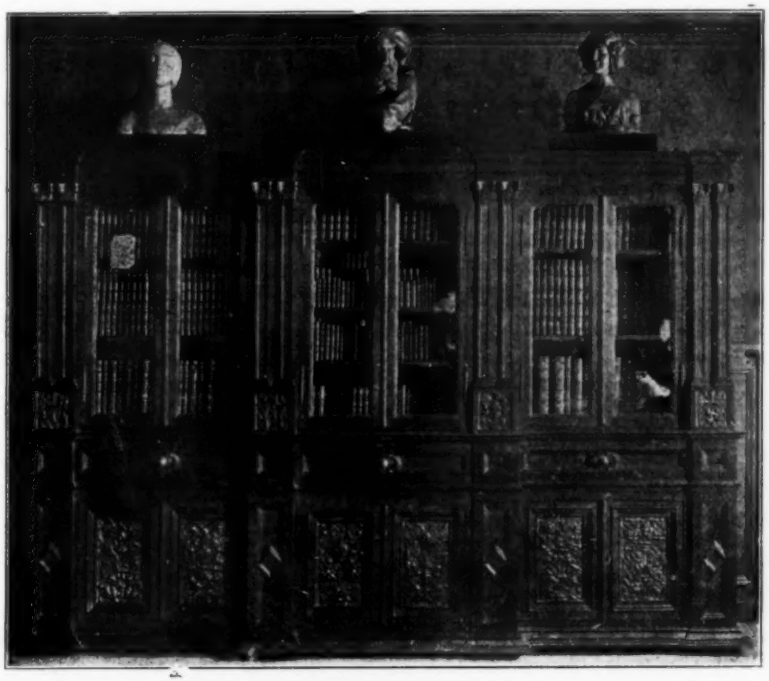
Is Hard Rubber Wood a Dream?

Lloyd W. Parsons, a regular contributor to "The Saturday Evening Post," who furnishes much interesting and informing matter for that great weekly, thus speaks of rubber:

"Henry C. Pearson, of The India Rubber World, sees the day when you can take the milk of the rubber tree, convert it into an elastic resin, then bake this resin with sulphur and turn the product into rosewood, walnut, mahogany and ebony of the finest sort.' He says: 'Any rare wood can thus be simulated. It will not warp or check, and it will not absorb moisture. Its sawdust and chips can be molded again into the first shape. Even the boards once out of use can be ground up and used again and again.'

"Whether such dreams materialize or not, rubber is sure to become one of the mightiest essentials in the life of civilized man."

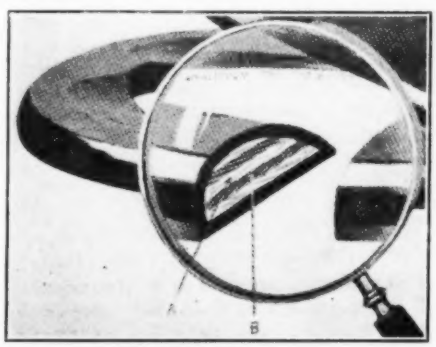
Mr. Parsons characterizes hard rubber wood as a dream, and does it most courteously. He classes it with that type of dream known in the dictionary as "an idle fancy." If, however, it should transpire that certain American factories were marketing products made of hard rubber wood, taking the place of tropical woods, the statement of the Editor at once is transferred from fancy to fact. Such is the case.



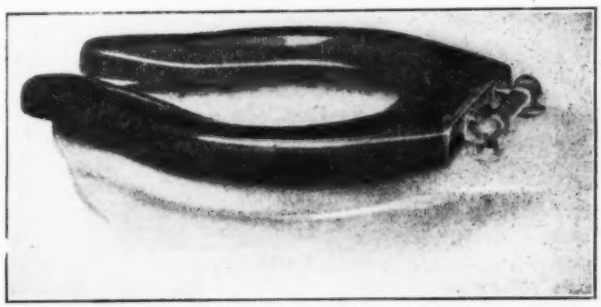
An Artistic Rubber Wood Cabinet.

BLACK OAK RUBBER WOOD.

Before starting to discuss present products it is well to recall that a few years ago a French artist built some very beautiful cabinets and bookcases not from wood but from hard rubber veneer backed with papier-maché. The effects secured were equal in every way to the best rosewood, mahogany and black oak. They were free from all of the faults that wood possesses. Heat or cold, moisture or dryness were absolutely without effect upon the product. No coating or varnish was used in the surface finish, as none was needed. The cabinet shown in the



Rubber Wood Closet Seat—Mahogany.
A and B Interior Lamination.



Rubber Wood Closet Seat—Ebony.

illustration was pronounced by wood connoisseurs to be a wonderful effect in black oak. A worn out cabinet of this sort could be broken up, the cellulose backing dissolved by the familiar process of acid rubber reclaiming and the hard rubber ground

REGULATION RUBBER WOOD BOWLING BALL. PLAIN BLACK.

and used in the production of new goods. At last reports, panels from this cabinet were reposing in a bonded warehouse in New York City.

HARD RUBBER LIGNUM-VITAE.

There is in the West Indies a tree, the *Guaiacum*, from the heart of which comes a dark-colored, heavy, cross-grained wood known as lignum-vitae. The wood is scarce and costly as it is in great demand for rollers, pestles, pulley blocks, and particularly for bowling balls. No other wood is comparable with it for such use. No other substance or combination of substances anywhere near equalled it in weight, solidity, polish and effectiveness until a hard rubber substitute was tried. Then it was not only equalled but outdone. To-day a bowling ball made of

REGULATION RUBBER WOOD BOWLING BALL, MOTTLED LIKE LIGNUM-VITAE.

hard rubber compound designed to imitate lignum-vitae reigns supreme. For weight, color, and polish it is everything that could be desired. And as for grain, Nature is beaten to a finish. Hard rubber lignum-vitae outwears the West Indian product. It contains no knots nor imperfections. And after years of service the worn out ball can be ground up into hard rubber dust and worked into sheet, rod or a thousand other useful hard rubber products.

HARD RUBBER EBONY AND MAHOGANY.

For interior finish hard rubber wood already has a firm foothold. The product is not called rubber lumber or rubber wood, however, but Whalebonite. Responding to a call for rubber from the medical fraternity, a closet seat made of hard rubber wood, imitating in color either ebony or mahogany, has been created. From the first it was a great success. It is so far superior to the best wooden seat that scores of hospitals, clubs, hotels and office buildings have adopted it. Unlike wood, it has no joints, will not split, crack or warp, is light in weight, and is absolutely unaffected by moisture, or by acid or acid fumes.

Not fancies, these, but facts—facts that forecast a great future for rubber wood.

THE POSITION OF PLANTATION RUBBER IN 1919.

AN INTERESTING SURVEY of the present condition of the plantation rubber market is made by E. L. Killick, the rubber expert of the London "Financier" in that periodical's "Rubber Share Handbook" for 1919. His judgment is as follows:

"A scrutiny of the figures relating to the production and consumption of rubber indicates that the world's stocks of all kinds at the present time are not less than 100,000 tons, and probably more. As far as can be ascertained at the moment, the total production in 1919 was about 350,000 tons, of which some 330,000 tons appear to have gone into consumption. The year consequently begins with but a comparatively small addition to the surplus on hand twelve months before. In 1920, an addition of some 50,000 tons to the world's output is expected, so that the total quantity of rubber of all kinds available this year, including stocks brought forward, seems likely to be something over 500,000 tons."

These figures are not so formidable as they seem to be at first sight, he goes on to say, because of the increased demand due to the development of motor traction. They leave a margin of three or four months' supply, as compared with the single month of a few years ago, but this is largely nullified by the congestion at the docks and the delays in distributing cargoes.

While there is no shortage in sight there is no fear of a glut of rubber; the production will hardly increase at the rate that the consumption will. An enormous development has taken place in the use of solid tires for commercial motors and the railroad strikes have shown the advantages of both these and the passenger motor cars. It is conceivable that there may be a shortage of rubber in a few years, with higher prices in consequence and a larger use of inferior grades and reclaimed material.

Mr. Killick explains that investment in rubber plantation shares is attractive not only on account of the huge returns obtained but also because the investment is steadily appreciating as the value of the plantation and its output increase yearly with the growth of the trees planted. His estimate of the finances of an acre of land in the Far East is very interesting.

"We may take it that an acre of jungle can be cleared, planted and brought to bearing at an approximate cost of £50. In Malaya, Sumatra and Borneo the tree should be of tappable girth at the end of the fifth year, and by the end of the seventh year the annual crop of rubber may be as much as 400 pounds per acre, given good average soil, suitable climatic conditions and capable management."

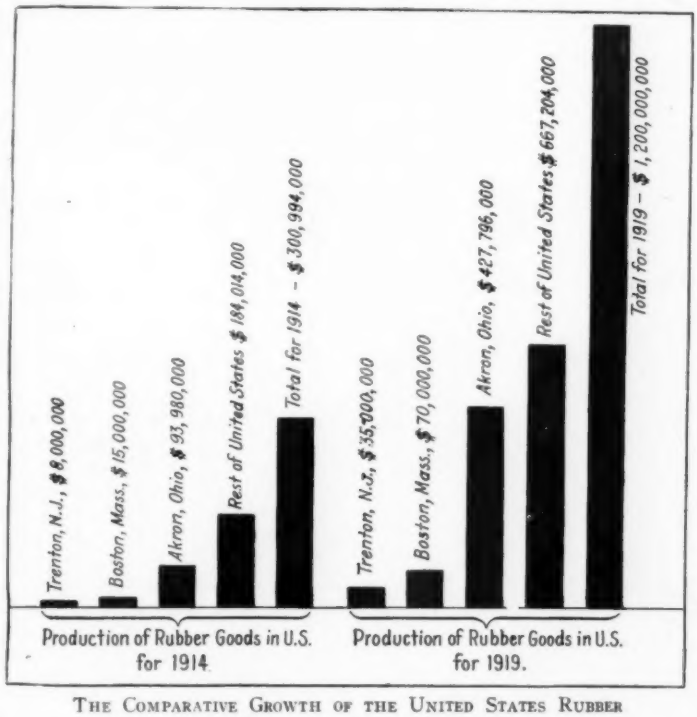
The question of producing costs is a little uncertain now, one disconcerting factor being the rise in the rupee and the trouble with exchange. In the past rubber has been marketed at an average cost of 10*d*. a pound, but to-day it costs at least 1*s*. and prices are advancing so that it is safer to take 1*s* 6*d*. as the cost of a pound of rubber ready to ship. The mean price obtained for it in the last five years has been 2*s*. 6*d*. a pound, and when Mr. Killick wrote, it was 2*s*. 10*d*. It is safe to call it 2*s*. 6*d*.; the profit on a pound would therefore be 1*s*. and on 400 pounds, an acre's crop, £20. That is the equivalent of 40 per cent on the capital investment of £50 to bring the acre into bearing.

The Effect of Location on Prosperity of American Rubber Industry.

By L. W. Alwyn-Schmidt, Consulting Economist.

THE VALUE of all the rubber goods manufactured in the City of Akron, Ohio, during the year 1914 amounted to $93,980,000, representing 41.4 per cent of the total output of rubber goods during that year valued at $300,994,000. No other city of the United States, or in the whole world, can show such an enormous production of rubber goods. The nearest approach to it in the United States is the City of Trenton, New Jersey, that produced rubber goods valued at $8,000,000 in 1914. It is, therefore, no wonder that Akron gives Ohio a superior lead in the manufacture of rubber products and makes it the leader among the states of the Union. During the year in question the value of rubber goods manufactured in that state amounted to $109,659,000. New Jersey with Trenton came second with a total production value of $25,458,000. Massachusetts, having Boston as its main center of rubber production, followed with a production valued at $23,000,000, Pennsylvania with $12,000,000, while Connecticut and New York each reported $10,000,000 approximately.

Both Akron and Trenton have kept their superiority as producers of rubber goods practically since rubber manufacturing started in the United States, but their influence upon American rubber production was considerably less during the preceding census when only 38.4 per cent of all the American rubber goods were manufactured in Akron, while Trenton did slightly better with 3.9 per cent to its share. As to rubber boots, Boston takes the lead, holding practically the whole of the production of Massachusetts, which also leads as a state in the production of rubber footwear, with a total production valued at $13,000,000 before the war. New Jersey, as in the past, still claims to be the leader as a producer of rubber belting, the industry giving to the city of Trenton its great importance as a rubber manufacturing center.


Trenton, N.J., $8,000,000
Boston, Mass., $15,000,000
Akron, Ohio, $93,980,000
Rest of United States $184,014,000
Total for 1914 - $300,994,000
Trenton, N.J., $35,000,000
Boston, Mass., $70,000,000
Akron, Ohio, $427,796,000
Rest of United States $667,204,000
Total for 1919 - $1,200,000,000
Production of Rubber Goods in U.S. for 1914
Production of Rubber Goods in U.S. for 1919.

THE COMPARATIVE GROWTH OF THE UNITED STATES RUBBER INDUSTRY IN LOCALIZED DISTRICTS.

Such concentration of one industry might be easily understood in the case of industries which are bound to their location by reason of their markets or the supply of raw materials. It appears, therefore, rather surprising that the rubber industry, which is not tethered by any of these considerations, has selected these localities for its home in the United States. Considering the enormous economic importance of the United States rubber industry one can say with some degree of correctness that the condition existing here is not repeated in any other country. Nowhere in the world is the rubber industry as concentrated as to include practically half of its total production inside the limits of one city which does not even claim to be of exceptional size. Neither is there anything in the present situation that could have forced the United States rubber industry to develop the plan of its original growth upon so narrow a basis as has been the case.

RUBBER INDUSTRY ECONOMICALLY INDEPENDENT.

Speaking from the viewpoint of national economy the rubber industry is an independent industrial unit. It is one of the master industries of the country and not supplementary to others. There is, therefore, no reason to locate in districts where it might be situated in easy proximity to other industries requiring its products. Such considerations may have influenced the location of the drop-forging industry, for instance, or the shoe findings industry, both industries that look for their market to related industries for which they prepare the raw materials. But the rubber industry has an independent market. While it is supplementary to certain industries which employ its products for the purpose of completing their own, there is no need for the rubber industry to rely upon the custom of these industries. It has its own markets and marketable products that are increasing in number and range of consumption from year to year. It is, therefore, tied less to location than many other industries, and its selection of locality is not determined by this one factor which narrows down considerably the choice of a home of many other industrial enterprises.

The explanation of the present situation in the geographical location of the United States rubber industry is, undoubtedly, historical development. The industry, having originally found a home in certain cities of the United States, continued to grow within these limits as the result of a natural division and subdivision of formerly united forces and, having once provided the ground for development, remained there by the simple force of habit. The outcome is analogous to that experienced in many other industries similarly placed, but just as conservative in the selection of their locations.

Having once acquired the habit, the industry has been slow to mend its ways. There was, no doubt, a certain advantage in the beginning in locating as much as possible in one city or district. The labor of other factories could be drawn upon. The men who formed the new enterprises were themselves at home in the district and had grown up in it. Finally, when the industrial development of the rubber industry started in earnest there was the main consideration of participating in the pros-

perity of the existing enterprises by starting operation from the same basis that had proved successful in their instance. But it is questionable whether the limits of this earlier development of the industry have not been reached, whether in the meanwhile in fact it has not outgrown the surroundings of its childhood.

This is a point which deserves the most serious consideration of the men in charge of the future of the rubber industry.

ECONOMIC CAPACITY OF ANY ONE CITY IS LIMITED.

The economic possibilities of any given neighborhood and its capacity for sustaining an industry are by no means inexhaustible. If this fact had not been already known to economists our most recent war history would have brought new proof. Under the pressure of the unprecedented war demand many industries were forced to expand, and finding it convenient for their purpose carried through the process of expansion upon the apparently fertile soil of their own location. New factories were erected in the immediate neighborhood of the mother enterprises and labor was attracted to the localities by the artificial means of offering high wages and similar inducements. The so-called war prosperity of the nation has not diminished since this happened. In fact, always excepting those industries that were connected immediately with the war, there has been a continuous growth in the economic activities of the country. Nevertheless, there is evidence that many of the works erected under the spur of the war were not destined to prosper under normal conditions. They find it difficult to hold their full complement of labor, they complain about the lack of fuel and power, and the distribution of their products is not proceeding as evenly as might be desired.

The cause is obvious. The existence of these new enterprises, planted upon the already heavily charged soil of one district, is menaced by the increasing economic exhaustion of that soil. A railway line can transport only a certain quantity of goods from and to one location. Charge it with a larger load and it must break down under its own real or imaginary prosperity. A community can house only a given number of inhabitants, and its facilities to provide for more are the limit of its progress toward increased population. It must take years to change these fundamental factors affecting the economic energies of a district and the industrial progress of the nation cannot wait until the process has been completed. Hence the failure of the industrial plants that come in contact with conditions as those described.

To apply this rule to the rubber industry there is much in the present location of that industry that calls for caution. The rubber industry in certain of its branches is a lavish employer of labor. It needs great quantities of water in others, and spacious factories are essential to the successful conduct of its affairs. This is not written to discourage the location of rubber factories in certain parts of this country, but to point out the danger of overloading the facilities of certain districts to the detriment of the industry as a whole.

EXCESSIVE CENTRALIZATION OF INDUSTRIES CAUSES INCREASE OF OPERATION EXPENSE.

It is only too obvious that industries working under artificially inflated conditions affecting their most essential manufacturing operations must work more expensively than others. Let three water-mills compete for the water power of one stream, and the system for carrying the water to the mill wheels will be more expensive to each mill than if only one mill operated on the same stream. The cost of mill operations will increase by the simple fact that the upkeep of the installations is more expensive. The same applies to a number of rubber factories competing for water, labor and the shipment of raw materials and manufactures inside the limits of one district or one city. Increased demand for these facilities will tend to increase their cost and while such a tendency may not show on the surface it is bound to influence each factory in one manner or another.

The need of having a large labor surplus, so essential to the operation of the rubber industry, causes a rather serious situation. To house this surplus, to make it comfortable and content with working conditions, is more difficult in a neighborhood dangerously overcharged than where living conditions are easy, where housing is plenty, and where labor may stay on comfortably even if temporarily unemployed.

If conditions are different, if they are in fact as witnessed just now in several of our great rubber manufacturing centers, labor will not stay. It will keep floating from city to city in search of better conditions, and it will certainly leave those locations where it finds it most difficult to remain. The result in each instance is an ever-recurring shortage of labor which makes work easy for the professional agitator. It degrades labor to the standard of a commodity shipped from city to city and prevents the growth of a healthy labor market based upon a labor force that owns its own home and commands a banking account that may be drawn upon during the short periods of unemployment which will happen even in the best organized industry. Incidentally it will give to the industry a labor force that stays on the job and does not leave for reasons entirely unconnected with conditions in the factory.

It seems from this that the present policy of centralization followed by the rubber industry is faulty from practically all reasons that apply to the selection of industrial location. It is not justified by the supply of raw materials and the markets of distribution. It has no support from the existence of special facilities for the operation of its enterprises because these conditions are not exceptional and are found practically in every city of importance in the United States. It is not advisable out of the special national consideration that may necessitate the location of certain valuable industries in regions where their presence is needed as a matter of economic policy.

While centralization is not wrong in itself and has its uses, a time may come where it can be dispensed with, where in fact a change in policy is advisable in the interest of the future growth of the industry. This time seems to have come for the American rubber industry.

The truth of this contention has been fully realized by many leading rubber manufacturers, and during the war attempts were made to place new rubber plants outside the more common range of location of that industry. No revolutionary steps have been undertaken, but the geographical location of the field of production has been broadened, with the result that many new cities have been entered by the rubber industry. The statistical records that are available for the study of such a development are still incomplete, and the following statements, therefore, are based upon general impression rather than upon statistical facts. The student of the more recent development in the United States rubber industry, however, will consent that this development while it has carried the industry over its former geographical limits, nevertheless has followed the lines of a distinct regional evolution. It has left the municipal centers and spread over states.

EFFECT OF RELOCATION.

The attempted relocation of the rubber industry has principally affected all the states that were originally important as rubber manufacturing centers, but it seems to have affected them not always in the same manner. In Ohio, for instance, the rubber industry has seen many additions. A close investigation of the situation, however, shows that the growth in the importance of that state as a rubber goods producer is still the result of increasing centralization, instead of the more desired decentralization of location. Akron still holds the overwhelming producing power of that state, and what new rubber works have been formed are located mostly in this city or in its immediate neighborhood. The gain of the rubber industry in that region, therefore, may not be an entire blessing, although it only falls in with the general tendency of the pre-war growth of the industry.

CENTRALIZATION IN EASTERN STATES.

Of more interest, however, is the industrial development of the industry in such states as New Jersey, New York, Massachusetts, Pennsylvania and Connecticut. The strength of the rubber industry of the first two states named is now concentrated upon an ever-widening area around the cities of Trenton and New York, with New York and its economic dependencies gaining an increasing influence upon the industry. In watching the development of the rubber industry in that particular field it is necessary to view the whole industrial district comprising the city of New York proper, Jersey City and Long Island as an economic entity which it really represents. The great port of New York divided between the two states of New York and New Jersey binds the district and makes it practically indivisible for all industrial purposes. Labor floats easily over it and may be drawn from its outskirts without necessitating even the relocation of its homes. The supply of raw materials, the distributing facilities of the whole district, its resources of industrial energy are all the same. It will take many years before the economic possibilities of this vast district are exhausted and before the rubber industry will be forced to vacate.

But while the whole district of New York has proven of exceptional strength, its subdivisions are showing considerable differences as to their general suitability for the location of the enterprises of the rubber industry. High ground rents, expensive railroad transportation, and high trucking cost, have made the industrial development of many parts at the mouth of the Hudson river uncongenial for industrial development and permit their industrial use for only the industries that can settle in such localities owing to special character of their production. Industries producing staple goods and having to compete with factories working often under the most favorable competitive conditions can hope to prosper only if they can create the same favorable conditions in their own location. The rubber industry of New York, therefore, has selected locations outside the circle of the most progressive industrial development of the Metropolitan district and has endeavored to duplicate the favorable characteristics of a location in a small city with the advantages of having at its disposal the facilities of the big city.

The same tendency is shown in Massachusetts, where the rubber industry in the beginning found its home in Boston proper, but is now spreading rapidly to the suburbs and is flowing over to the smaller cities of the state. Connecticut and Pennsylvania finally represent the newest phase of the evolution of the industry by introducing the decentralization of the industry over a district with a distinct mixed industrial character.

SCIENTIFIC GROUPING OF INDUSTRIES NEEDED.

It is obvious that the location of any industrial enterprise cannot be a matter of entire indifference to its owners, neither can it remain so for the nation as a whole. If decentralization, therefore, is recognized as a desirable aim it should be encouraged. But the selection of the new policy should not mean an entire cutting adrift from the past. The world progresses by evolution and not by revolution. We cannot hope to be benefited by throwing over the old without having first provided for the new. This is particularly the case in the instance under consideration. Nothing can be gained by placing factories outside the great centers of their industry for only the purpose of decentralizing industrial effort. What is required rather is a more scientific grouping of industries in order to make them supplementary in their economic wants and effort.

A new rubber factory for instance might be most advantageously placed in a district having already a few chemical plants of a general nature. The existing plants may easily furnish their floating surplus of labor to the rubber industry and in turn the new rubber works might attract labor to assist the chemical industry during the period of their high peak of operation. Generally speaking, districts with mixed industries are always preferable to such as specialize because they offer larger opportunities for the new plant in respect to labor, supply of raw materials, and markets. Port cities and cities with a plentiful water supply will always attract the rubber industry. But the case of Akron shows that a large industry can very well prosper without the advantages of a port of its own.

The problem of location, of course, must always be dealt with strictly individually. But it is just for that reason that it requires more thought and care than is generally given to it by the man in search for a new factory site. The thousands of factory buildings, standing empty in the United States before the war because their owners had failed to take the apparently so essential precaution to inquire into their special suitability for the intended purpose, speak a language of caution. There is waste in this form of handling the fortunes of our industry that could easily be avoided. After all, the rent for these buildings and the cost of all inlustrial failures has to be borne by the few who are destined to succeed. Every failure, every mistake in one of those fundamental conditions, makes success more difficult and production more expensive.

PRESIDENT MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

It is particularly fitting that John T. Christie should be president of the Mid-West Rubber Manufacturers' Association. He is a native son of the Middle West, and typifies the business enterprise of that section. He was born June 28, 1878, at Waterloo, Iowa, and has lived in the Hawkeye state ever since. Following his education in the public schools of Des Moines, he began his business career with the W. W. Wise Ice Co., of that city. He was later elected Deputy County Treasurer, and upon the expiration of his term became a partner in the Harter-Christie Insurance Co., eventually acquiring sole ownership of the agency, which is still being conducted under his supervision.

John T. Christie.

In 1915 Mr. Christie was one of the incorporators of the Hawkeye Tire Co., a Delaware corporation, and of the Hawkeye Tire Co., an Iowa corporation, both with an authorized capital of $500,000 to manufacture and deal in all kinds of automobile tires, inner tubes, etc., and was elected president, which office he has since held. Under his leadership the company has made continuous progress, and it is through the success of this organization that he has become prominent as one of the most promising of the younger rubber men. A year after its incorporation the firm name was changed to the Hawkeye Tire & Rubber Co., and later the capitalization of the company was increased to $3,500,000, and a new factory costing approximately $350,000 was erected.

A man of rare executive ability, quick perception, keen business judgment, and deeply interested in every movement pertaining to the rubber industry, Mr. Christie was among the leaders in organizing the Mid-West Rubber Manufacturers' Association, and was its first vice-president. In December, 1919, he was elected president.

New Uses for Old Tires and Tubes.

What to do with cast-off automobile tires is a burning question. Some 40,000,000 of them are now being discarded annually, and every year there will be more. Utilizing waste materials of every sort is one of the great problems of the times, and the item of old tires is of the first magnitude.

Both the practical and the facetious man has many suggestions to offer, and both have contributed much toward solving this great problem. With the best grades of crude rubber selling around half a dollar a pound and scrap rubber almost a drug on the market, the junk man will pay only fifty cents to a couple of dollars for a tire that when new cost $20 to $75. Plans to get more than the junk man offers have therefore appeared by the score.

THE BUSINESS OF SALVAGING USED TIRES.

The most feasible uses for discarded tires have been developed by rebuilding the best of them, dissecting the badly damaged ones in large quantities, reclaiming the rubber, stripping the fabric and using it again in numerous lines of manufactured goods. With tire duck selling at three to four times pre-war prices, weavers scarcely able to keep pace with the demand and a shortage of the best long-staple cotton, good peeled tire fabric has a monetary value worth considering; it is now the chief value of an old tire.

Ash Sifter Made from an Old Tire and Wire Screen.

Repairable casings of guaranteed makes, prematurely discarded but not worn out, are first selected for rebuilding. Tires with perfect beads, only minor defects of fabric, but one or two small blow-outs and no rim-cuts or loose plies are the ones chosen. The beads are first removed with a bead trimmer, the bead fabric stripped off for reclaiming and the hard rubber bead cores ground fine for use as hard rubber dust. The various plies of fabric are separated by a fabric stripping machine. This pulled fabric, single or multiple ply as specified, is extensively used in rebuilding and repairing tires, and for the manufacture of blow-out patches and reliners, as well as for a variety of small rubber articles requiriing strong fabric. Tire accessories made up from sound pulled fabric, properly prepared, are recognized as equal in serviceability to such articles produced from new fabric.

PATENTED USES FOR OLD TIRE MATERIALS.

Quite apart from tire repair and manufacture, many new uses are being found for peeled fabric. Within the past year many patents have been taken out both in the United States and abroad.

Under F. L. Harley's United States patent No. 1,285,992 a new built-up fabric product is made by stripping the rubber from the tire carcass and subjecting the fabric body to heat and heavy pressure in order to thoroughly compress the rubber particles with which the fabric is impregnated and to vulcanize the two together. The resultant stock is then cut into pieces of proper size and shape for the purpose intended, the waste being ground up, reduced to a mass, spread over and by pressure applied to the cut pieces, thereby forming a built-up stock.

J. J. Dettling and E. A. Tinsman in United States Patent No. 1,309,118 protect a method of stripping the built-up plies of fabric of a tire carcass from each other and reshaping segmental portions with the addition of rubber into leggings of fixed shape and outline.

According to British patent No. 121,043 of 1919, attachable soles and heels, heel tips and protectors are made by vulcanizing a layer of rubber or rubber substitute on to a foundation of waste canvas from tire covers or waste balata belting.

U. Chandeyson's French patent No. 488,979 of 1919 covers the utilization of used or unused pneumatic tires for the manufacture of soles, heels, shanks and uppers for shoes; of gaiters, saddle bags, etc.; and more generally of all articles of rubber or rubberized fabric.

Another French patent, No. 490,382 of 1919, granted to V. C. Thénant and L. Méliorat, is for the utilization of pneumatic tire casings for making lounging shoes of all kinds.

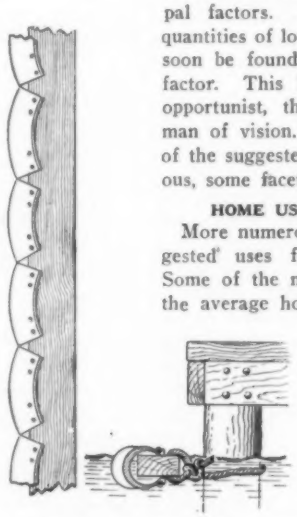
Basket Frames for Basket-ball Are Easily Evolved from Discarded Bicycle Tires.

THE FUTURE OUTLOOK.

Probably this is but the beginning, and many patents along these lines will follow. Converting old tire materials to new uses promises to become a great business in itself. Outlets for the stripped fabric are already developing rapidly, which takes care of one of the two principal factors. And new uses for great quantities of low-cost reclaimed rubber will soon be found to take care of the other factor. This latter field is one for the opportunist, the rubber chemist and the man of vision. The above are but a few of the suggested uses, however, some serious, some facetious.

HOME USES FOR OLD CASINGS.

More numerous and varied are the suggested uses for discarded tire casings. Some of the most amusing are those for the average home. To begin the list, an old casing with a circular piece of wire screen cloth attached to one of the beads in place of the rim makes an efficient hand sifter for coal ashes. A lawn sprinkler of the ring type can be made by attaching a garden hose connection through the tread, punching numerous holes through one of the side walls and stitching the clincher beads



Sections of Old Casings Make Efficient Dock or Float Bumpers.

together, applying cement and vulcanizing to make the ring water tight. Two or three sections of an old casing cut to proper lengths, the cut ends being sewed together with waxed thread to form rings of suitable diameter provide the basis of excellent tree-guards. Protective strips of wood are then placed vertically around the tree and lashed to the rings with tarred rope. Short lengths of old casings are useful for temporary repairs to leaky eaves gutters, and clincher beads cut from casings may be nailed to the bottoms of doors for weather strips. A novel baby's walking chair can be made with two old casings, one held above the other by a series of spokes from an old wire wheel run through them vertically and provided with several casters at the bottom. Probably a revolving wheel for pet squirrels could be made in much the same manner.

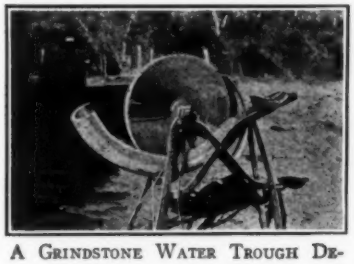
IN ATHLETICS AND RECREATIONS.

The gymnasium, athletics and outdoor recreations have brought forth a few ideas. In an improvised gymnasium two old casings may be provided with dependent nets and used as the baskets for basket ball. One such casing properly suspended and rigged makes a strong and nearly noiseless punching bag frame.

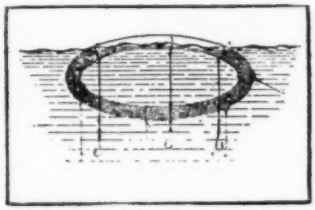
Tire sections of uniform length laced together along the beads and hung over the sides make effective motor boat buffers. They are also good dock and float bumpers when similarly attached. Small size whole casings encircling the wharf piles and supported by wooden floats within them are effective at all tides. Clowns and jugglers might even use old tires instead of the conventional circus hoop.

FARM USES.

On the farm quite as many schemes have been thought of. Pieces of tire casing cut to proper shape and combining tread rubber and fabric, it has been found, are effective for tapping heavy farm shoes to prolong their wear. A length of tire casing furnishes a convenient flexible means of conducting water occasionally from the pump to a trough nearby, yet does not prevent filling pails at the pump direct. Half a tire casing hung under a grindstone and filled with water gives an automatic stone wetter that will not rust. With four old casings and two tackle blocks a sling can be rigged to lift sick animals to their feet or support them while helpless. Old tire casings laid over the floor of a truck body afford an excellent shock absorbing layer on which to pile crates of eggs or other fragile merchandise. A pile of them in diminishing sizes and suitably fastened together has been suggested as a near approach to the much pictured conventional beehive. With a larger entrance cut at the base a small dog kennel could be made in the same way.



A Grindstone Water Trough Devised from an Old Casing.



An Inner Tube Makes an Improvised "Trot-line."

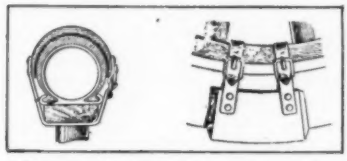
REPAIR SHOP SCHEMES.

In a small repair shop old tires have their uses quite apart from furnishing patch stock for tubes and pulled fabric for stopping up blow-outs. A whole tire suspended over the door with a circular canvas replacing the wheel makes an excellent sign on which to paint the proprietor's name. A segment cut from a giant truck tire and mounted on a wooden stand provides a water trough in which to test patched inner tubes.

IDEAS FOR THE GARAGE AND CAR.

For the home garage and the car itself there are still other uses to which old casings may be put. Cut into quarter sections and fastened to the sides of a garage door they make excellent bumpers. Old tires can be made to save new ones by using sections of them spread flat to pad the automobile stand. Similar sections of rim-cut tires with the non-skid tread little damaged can be attached to the running board of the car and used as mats for wiping the feet.

Turning to more practical ideas, an old casing cut into sections and with edges skived to form a very gradual beveled edge provides a useful collection of home-made blow-out patches. Rim-cut tires with the beads cut away have been used as overshoes to prolong the tread wear of tires of smaller size, while the fabric carcasses of discarded tires with beads and all rubber removed have furnished many reliners to reinforce weak tires a size larger. The overshoes may be sewed to the tire or held in place by occasional straps riveted to the edges and passing from side to side about the felloe of the wheel.



Emergency Tire Boots Can Be Made from Sections of Old Tires.

USES FOR DISCARDED INNER TUBES.

It should not be forgotten that more inner tubes are scrapped than are tire casings. As they are free from fabric, however, they are reclaimed more easily and do not present the problem that is found in the worn out casing. Suggestions as to their use are, nevertheless, multitudinous.

A Garden Sprinkler Evolved from an Old Inner Tube.

The whole inner tube, when too much patched to risk in a tire, yet still air tight, has several uses suggested and actual. Its buoyancy on the water when inflated is the delight of the bathers learning to swim, while fishing lines suspended from it are said to excell a "trot-line," as the motion of the waves jiggles the hooks and attracts fish to the bait. It is an effective life preserver, and in a double sense, for bootleggers have used the spare tires on their cars as containers for beverages having an alcoholic content greatly in excess of one-half of one per cent. With a length of pump hose attached to the valve stem an inner tube can be filled with water under pressure, slung over the shoulder and used to spray plants. To fill, slip the hose over a faucet and press the valve. Inner tubes have been used as tow lines for disabled automobiles, and they furnish swing ropes that give much amusement to children.

Part of an inner tube, including the valve, makes a serviceable

air pressure chamber for a brazing or soldering torch. The cut ends of the tube may be sealed by two clamps consisting of two pieces of wood drawn together by screws. The bag is inflated in the ordinary manner by a tire pump. For an outlet hose connection, a second valve stem and base from another discarded tube should be attached to the tube section and the valve inside removed.

Inner tubes cut with shears transversely into narrow strips furnish excellent elastic bands to put around documents. Lengthwise strips cut from them offer good substitutes for the long, slender coil springs used for sash curtain rods and to close screen doors. Pieces of all sizes and shape may be used for patch stock for mending other tubes, hot water bags, boot legs and various rubber articles. With the aid of shears and rubber cement, aprons and even overalls can be made out of large truck tire inner tubes for protection when washing cars or doing other wet work. A length of inner tube closed with cement at one end and having a ring support and handle of heavy wire at the other end makes a handy folding dipper for filling automobile radiators.

Note.—The illustrations used in this article were furnished by "Popular Science Monthly."

ELECTRICAL YARNS.

BEFORE THE WAR the electrical or insulating yarns used to cover wires conveying electricity, were spun almost wholly in this country. The war caused the demand for them to increase greatly, because insulated wires were used for new purposes, as, for instance, the airplane magnetos, which demanded very fine qualities. The yarns had to be imported, the amount in 1918 being 651,887 pounds, whereas in 1914 the importations were 12,256 pounds.

GROUP-WOUND YARN FOR WIRE INSULATION.

The electrical yarns imported are all gray, combed, mule-spun, single yarns, made of long-staple cotton, chiefly Egyptian (Abbassi (white Egyptian) or Joannovich. The growing of these cottons has nearly ceased and in 1918 much yarn of inferior tensile strength, in which American Allen seed was used instead of Abbassi, and Mitafifi (brown Egyptian) in place of Joannovich, was imported. For extremely fine combs Sea Island cotton is essential; that was cut off by the British restrictions on the exportation of Sea Island, and by the ravages of the boll weevil in this country.

In 1914 the chief item of import was 8,058 pounds of 117/1; in 1918 there were imports of 301,441 pounds of 97/1, of 181,829 pounds of 98/1, of smaller amounts of 78/1, 120/1, 140/1 and 117/1 and of a very little 200/1. Part came with a multiple number of single ends wound together on cheeses (tubes or cones), and part with one thread on large warp caps. The leading import is usually described on invoices as "97s super combed Joan twist on cheese, 6 ends laid flat," which, being interpreted, means that it is made of Joannovich Egyptian cotton, carefully combed, spun with a warp twist, and put up on cheeses with 6 ends wound on side by side. The number of ends grouped together in winding varies from 3 to 30, though 5 or 6 is the usual number. Occasionally the yarn is invoiced as 6/97, 12/97, 30/97 and so on; this would indicate, first, the number of single yarns twisted or folded together, and, second, the individual yarn count; namely, that 6, 12 or 30 ends of 97s had been twisted together to make ply yarns. This would be misleading for electrical yarns, as they had not been twisted together.

Electrical yarns imported on warp caps are usually sold to thread mills or to firms which have facilities for winding them on cones and grouping together the number of ends desired. They supply electrical firms who use braiding machines in covering the bare copper wire with the grouped yarn. Yarns which come already grouped are readly for braiding. The English winding charges are low, but if the patented Universal machine is used for patent spools, they charge more than is customary in this country for the same work. The electrical yarns are supplied chiefly by Manchester and Bolton; some spinners do their own exporting, but in 1918 half the imports were in the hands of one Manchester agent who passed them on to one American firm.

IMPORTS OF ELECTRICAL YARNS BY COUNTS.

Count.	1914.	1918.
78/1 ..... *pounds*	.....	74,080
97/1	.....	301,441
98/1	1,022	181,829
117/1	8,058	14,324
120/1	1,131	45,797
140/1	46	21,588
Other	1,999	12,828
Totals	12,256	651,887

IMPORTS BY SOURCES.

	1914.	1918.
Manchester ..... *pounds*	11,956	371,210
Bolton	.....	209,907
Middleton Junction	.....	49,325
Bradford	.....	18,997
Other	300	2,418
Totals	12,256	651,887

IMPORTERS' PRICES FOR 98/1 ELECTRIC GRAY, COUNTED ELECTRICAL YARN, PER POUND.

1916—March 2, $1; July 18, $1.20; October 17, $1.46; November 17, $1.90.
1917—April 9, $1.85; April 11, $1.90.
1918—September 1, $2.35; November 11, $2.85.
1919—March 10, $2.20, and importations stopped.

COST PER POUND FOR WINDING PARALLEL ENDS ON TUBES.

Year.	Count.	6 Ends.	10 Ends.	24 Ends.	30 Ends.
1914	100s	0.1074	0.0812	0.0704	0.0672
1915	100s	.0946	.0827	.0715	.0670
1916	100s	.1054	.0769	.0640	.0587
1917	100s	.1055	.1113	.0958	.0896
1918	100s	.0999	.1389	.1193	.1113
1919	100s	.1445	.1525	.1312	.1228

WOULD STIMULATE FOREIGN TRADE.

A special invitation has been extended to members of the rubber industry to attend the Seventh National Foreign Trade Convention to be held in San Francisco, May 12-15, when special trade advisers will be present from the Far East, Australia and South America, and may be consulted by American business men. The Los Angeles and Seattle Chambers of Commerce are preparing special trade exhibits and a large number of Americans who are now doing business in foreign countries have been invited to attend. The National Foreign Trade Council is headed by James A. Farrell, president of the United States Steel Corp., and among the active members are A. C. Bedford, chairman of the board of the Standard Oil Co. of New Jersey; Robert Dollar, president of the Robert Dollar Co., San Francisco, California; Alva B. Johnson, former president of Baldwin Locomotive Works, Philadelphia, Pennsylvania; William Cooper Procter, Procter & Gamble Co., Cincinnati, Ohio; W. L. Saunders, chairman of the board, Ingersoll-Rand Co., New York City; John N. Willys, president of Willys-Overland Co., Toledo, Ohio; and Thomas E. Wilson, president of Wilson & Co., Chicago, Illinois. It is pointed out that Europe's debt to the United States means a drive of imports, and methods of offsetting it by expanding exports will be one of the chief subjects of the convention. Such kindred subjects as credit information, direct and commission selling, financing of foreign trade, etc., will be discussed.

Some Labor Problems in the Rubber Industry.

THE POST-WAR PERIOD has presented to the rubber manufacturer labor problems undreamed of in the cost-plus, work-or-fight era from which we have just emerged. Radicalism and strikes have fortunately been less frequent and serious than in many of the allied industries, but this circumstance has not blinded the manufacturer to the necessity of a fair and liberal labor policy. For enlightened production, men realize that a high labor turnover is expensive.

Acting upon this principle, they have granted two wage increases in the rubber shoe field during the past six months and have secured the cooperation of the workers themselves by more intelligent welfare work, shorter hours, schools for non-English speaking employes and schools for foremen, all of which have helped toward the goal of increased production.

WOMEN WORKERS INCREASING.

Owing to the war the influx of women in rubber manufacturing of all kinds has been notable. Twenty per cent of the factory work in the plant of The Goodyear Tire & Rubber Co., Akron, Ohio, is done by women. Among the jobs performed by women workers are: finishing tires, cutting and splicing fabrics for balloons, weighing rubber, molding and trimming rubber heels, operating electric trucks, running machines for refining and straining reclaimed rubber, running rubber washing machines, splicing and trimming tire tread bands, making tubes, and separating sheets of rubber. The war also proved that the work of time clerks, inspectors and stock room attendants is ideally suited to women workers. In the rubber shoe industry women have been employed from the beginning. They are used in the cutting room for sorting and booking work, in the preparatory departments for stitching tennis uppers, making quarters, cementing linings and inside work, and in making gum shoes and gaiters. Inspectors and forewomen in these departments have nearly all graduated from the bench. Among the more recent jobs for which women are being trained are making boots and heavy gaiters, formerly done exclusively by men, and operating clickers and cutting machines. The introduction of sole layers and machine lasters has removed the former obstacle of strength required to perform these operations.

The bettering of working conditions has been a direct result of the increased number of women workers. The factory nurse and the rest-room have been introduced. Some factories make a practice of serving hot coffee or tea during the morning hours. Boarding and lodging houses, even in the larger cities, and day nurseries where mothers can leave their children under competent care while at work, are signs of the times.

HOW TO ENCOURAGE REGULAR ATTENDANCE.

Irregular attendance is the greatest problem with female help. In rubber shoe manufacturing this not only means loss of production but also the danger of valuable material, cemented and prepared for making, becoming air cured and scrapped. One factory takes care of this by having several "drop" teams of workers who make up the tickets of the girls who are out. Others have tried giving a weekly bonus for perfect attendance, but in these days of high wages this scheme has lost its appeal. A more recent idea has been the creation of a spirit of rivalry between team and individual workers for the best record of "firsts" with a prize for the winners which they hold only so long as they can maintain their record.

Still another idea has been the "committee" system in accordance with which groups of workers are organized under the heads of "attendance" committees, committees on "economy and efficient production," etc. One objection to this system is that if it is not carefully handled it may create jealousy among the operators, and be looked upon either with suspicion or jealousy by the girls not included.

Baseball teams in the summer, and a bowling league with each department represented by a team in the winter, serve to stimulate teamwork and interest among the men, and if this interest is fostered by the factory paper it will often lead to beneficial results. Foremen and executives can help matters a great deal by showing a knowledge of the games and interest in them by their attendance at matches between rival teams. Along the same lines, one factory holds a dance every day during the noon hour and reports that it helps a great deal toward keeping the women workers in regular attendance and contented and happy.

FAULTS OF THE EMPLOYMENT DEPARTMENT.

The employment department in itself is not especially new, but manufacturers are watching and studying it more closely than ever. How does it function? Are the applicants for employment examined for the job to determine their qualifications or are they picked in hit-or-miss fashion? If there is no job available for the applicant at the time, how is he turned down? A letter from a rejected applicant woke one concern up to the fact that it was losing its reputation and help as well by the cold-blooded policy of its employment department. The man had waited an hour and a half for an interview only to be told finally by an office boy that all the jobs had been filled. He had no opportunity to talk to anyone in authority and went away in an exceedingly bitter frame of mind.

One morning not long ago a man about 45 years old and of slender build walked into the employment bureau of a rubber company and asked for work. The only job available was trucking rubber from the freight cars to the stock room. "It's a very heavy job. I don't know whether you would want it or not," he was told. "How heavy?" asked the man. "Oh, the rubber weighs from 200 to 300 pounds a load," was the answer. The man was obviously unsuited to the job, yet he hesitated. He needed the work. "Take it or leave it," was the impatient rejoinder from the narrow, forbidding ticket window. The man did not take the job, but if he had he would have been allowed to take it. Many of the large concerns now require a physical examination of all applicants, and in this case, it would have been a protection for the worker as well as for the employer.

START THE NEW WORKER RIGHT.

Much depends upon the first day on the job for the new employe. If he is kept idle for several hours waiting for the busy foreman to assign him to his task, he naturally forms the impression that time doesn't amount to very much in that particular plant. There are many things he wants to know about the working conditions which very often he has to pick up from his fellows. When do they pay? How much time do they have for lunch? Any morning rest periods? Any smoking privileges? Where are the sanitary accommodations located? These are little things, but to the new man they are the things he naturally wants to know.

Nearly all of the waste of material and petty pilfering caused by green employes can be laid at the door of the foreman who failed to instruct his men. The workman who cut a piece of tire duck from the roll and used it for a towel was not wholly to blame. Not more was the apprentice shoemaker who mixed her upper scrap with the friction trimmings. Breakage of cases in the packing and shipping room is a loss often allowed to continue without any attempt to check it. "Pat, you wouldn't tear up a five-dollar bill, even if it wasn't yours, would you? Well,

that case you just smashed cost this company just that," may sound trite, but it is often effective. The war and this era of high prices have taught workers to save through Liberty Bonds and War Savings Stamps, and the lessons can very readily be applied in the shop. Getting started right is half the battle. The shipyards and munition factories demonstrated that green workers often turn out better than experienced hands because they had nothing to unlearn. It was possible to teach them the exact methods of the concern without encountering opposition due to methods learned in other shops. The story is told of an experienced carpenter employed in an airplane factory. All his life he had been used to trimming off ends of boards that stuck out. He ruined $700 of seasoned ash in a very few minutes by sawing off the ends of some partially constructed planes.

Some factories separate the training of apprentices entirely from the regular departments, particularly in the case of shoemakers, tire builders, etc. In the mill room there is opportunity for training operators through various stages. Operators come in as helpers, whose duty it is to change rolls and carry stock; later they become mill men, then assistant calender hands, with the chance to become calender men. Similarly in the cutting room, workers can start as stock carriers and work up to clicker and Parsons machine operators.

RUBBER WORKERS OF THE OLD SCHOOL.

But what of the old rubber workers who served their apprenticeships forty years ago? No rubber shop to-day is complete without them. What a picturesque lot they are, plying their knives with sturdy strokes over in the far corner of the cutting room where the long rows of machines have crowded them! They openly scoff at the youngsters, to be sure. But spend a lunch hour getting acquainted with them. They will tell you of rubber shops long since closed and incidentally give you a friendly tip on foremen who have come and gone. They swear at the makers who are always "short" and ask you where they lose or scrap the work, yet they cut it over just the same. They chew tobacco and take snuff, but what of that? There are few industries to-day which have as loyal and as hardworking men in the ranks as these fellows of the old school.

THE IMPORTANCE OF EFFICIENT FOREMEN.

Rubber factory executives have gradually learned to appreciate the fact that the labor problem rests a great deal with their foremen. The college professor who went into the steel mills during the war disguised as a laborer, was not far wrong when he said to the general manager, "Your men are fine; but your foremen are a bunch of blackguards and slave drivers." Foremen are being sent to school not only to learn the technical side, but also to emphasize the human side. The day has gone when the foreman can order his men as a sergeant would a platoon. In those days there was a line of men waiting outside to take the job of the man who fell down. To-day that man can go across the street and get as good a job or better. And he knows it. He cannot be bullied or coddled. The foreman fires a man to-day only as a last resort in exceptional cases. When he does, he has lost.

It is an unwarranted assumption to take it for granted that the workman is interested in the product. He is not. He is only there because it brings him the wherewithal to get what he wants and needs. And their interests are as wide apart as the two poles. "John, how is the new baby getting along?"—"Mike, are the hens laying well?"—"George, have you got your house painted yet?"—these are the things that interest men. I saw a foreman not long ago stop to admire the pictures of three children, proudly displayed by their father, a rubber worker. The man was a piece worker, yet he stopped five minutes to display them. That production time lost was more than made up to the company by the good-will it created. Usually the way a man feels toward his foreman is the way he feels toward the company and his job.

MAINTAINING PLANT MORALE.

A wide-awake executive can scent trouble in his plant and nip it in the bud. It takes very little these days to start wild rumors. Some petty grievance of a workman is magnified by gossip; piece rates obviously unfair; carelessly worded and ambiguous notices; petty rules; a thousand little things can impair morale irretrievably if not watched. Not many weeks past I heard a workman berating the company as crooked. His argument was based on a story that six months previously a workman had left, having paid six installments on a Liberty Bond, amounting to five or six dollars, and the company had only returned 50 cents to him. Upon investigation it was found that there was nothing to the story at all; but that did not prevent it from being repeated and doing harm.

Many pay-rolls are full of unfairness, due to the weakness in management which allows a group of workmen to secure a raise for themselves by making threats, while the more efficient yet timid ones plug along at the old rates. Records of work performed are the true basis for promotion. And nothing is gained by secrecy regarding production methods or records. Gradually the old mists which have obscured rubber shops for a quarter of a century are clearing away. Men are beginning to hark back to Solomon who said "There is nothing new under the sun." The old type of foreman who put off with vague and false answers the ambitious workman with a desire to learn has now discovered that his prized trade secrets are no longer of value to anyone except himself as keepsakes. Education, fairness and equal opportunity for all, with the plums for ability, are the new standards.

RUBBER WORKERS A FAVORED CLASS.

Ten years ago the man just out of college who went to work in a factory was scoffed at. Most of the graduates flocked to offices and banks for a "white-collar" job. The personnel of the graduates is changing now; the sons of the mill hands are beginning to outnumber the sons of the directors. And the whole thing is reversed. The factory worker's son seeks the office job, and the director's son is going into the shop. What does he find in the rubber factories? Instead of the bushy-bearded I. W. W. he finds a cheerful, wholesome class of people, proud of their occupation and holding shares in the corporation. If a census were taken of the so-called labor class in the rubber industry many of them would be classed as capitalists. For rubber workers are noted for sticking to their trade, and many are part owners in the shops where they work.

The purpose of this paper is not point out a royal road to a cure-all for labor troubles. There is none. Rather is it to indicate the tendencies of the times which combine to make the problem. The actual solving of it depends upon the individual manufacturer's condition which only he can know and analyze for himself.

LOOKING FOR BETTER HEVEA.

The scientific improvement of plants that are cultivated for commercial purposes in tropical countries is urged as a necessity by Professor W. Bateson in "Production." In his brief survey of rubber, one of the commodities he deals with, he takes the same point of view as that of J. P. Romein in THE INDIA RUBBER WORLD, October 1, 1919, and proposes much the same mode of action. He thinks the government scientific stations should pick out the best yielding *Hevea brasiliensis* trees and distribute cuttings from them to planters. The attempt to do this on a large scale at Peradeniya in Ceylon was a failure, as only one cutting in 3,000 succeeded, but the method has worked with no great difficulty in other cases. It is from cuttings and not from seeds that improvement in *Hevea* must be looked for.

"RUBBER MACHINERY" BY HENRY C. PEARSON, IS FILLED WITH valuable information for rubber manufacturers. Price $6.

Rubber Tariffs of Europe.

THE UNITED STATES in 1918 exported manufactured rubber goods to European countries to the amount of $6,055,568, a sum about one-half that obtained for rubber exports in 1917 and less than a third of what Europe paid in 1916. The value reverts to that of the trade before the war. The change from the fiscal year running from July 1 through June 30 to the calendar year, January-December, makes the comparison with previous years, somewhat confusing, inasmuch as the exports for the fiscal year 1917-18 were $9,500,763 but fell off so rapidly in the last six months that the total for the calendar year 1918 was only $6,055,568.

There is a marked decline, not only from the too busy war years, but also from the years before the United States entered the conflict. The only exception is in the item of rubber boots of which there were phenomenal exports in the first months of the year. The best customer was France, which took about two-thirds of all the exports, $4,155,457 worth, and nearly three times as great a value of rubber goods as England, the next on the list.

France's investment was $2,120,031 in rubber boots and $105,570 in shoes; she also took $901,013 of automobile tires and $947,480 of miscellaneous goods including druggists' sundries.

England was the main purchaser of belting, hose and packing, buying $144,724 worth; she took $232,983 worth of rubber boots, $198,022 of automobile tires and $782,386 of miscellaneous goods. Italy, third on the list, invested nearly all her $259,463 in miscellaneous goods; the three Scandinavian countries—Denmark, Norway and Sweden, each bought from $40,000 to $60,000 of American goods and Iceland put $16,833 into chiefly rubber boots and shoes.

The amazing drop in shoes from 2,404,052 pair in 1916-17 to 298,064 pair in 1917-18 and 91,581 in the calendar year 1918 may be due to oversupply, and doubtless in many lines the end of the war left big stocks in government hands. The falling off is partly due to the ability of the belligerant countries to turn men into their own factories, partly to the difficulties imposed on international trading by the drop in the rates of exchange, but seems also due in part to deliberate and aggressive endeavors to win for home manufactures the markets and goods where Americans have been successful; as in the campaign the Dunlop Rubber Co. has initiated and proclaimed.

While the countries which have suffered and are still suffering from the lack of rubber during the war years are letting the tariff bars down for raw materials and even in many cases for manufactured goods, the Entente Powers, even those inclined to free trade, alarmed at American progress, are imposing protective restrictions, which, even if they do not take the form of tariff duties, make it difficult for foreign, and especially American, goods to enter their countries.

The succeeding extracts from the traffic of the principal countries of Europe show the competition to which rubber manufacturers of the United States are subject under existing traiff conditions. Owing to frequent tariff changes the figures and information given below should be periodically verified and small trial shipments made to test the rates:

UNITED STATES EXPORTS OF RUBBER GOODS TO EUROPE—1913-1918.

EXPORTED TO—	Belting, Hose and Packing.	Boots.		Shoes.		Druggists' Rubber Sundries.	Tires.		All Other Manufactures of Rubber.	Total Values.
EUROPE:	Value.	Pairs.	Value.	Pairs.	Value.	Value.	Automobile. Value.	All Other. Value.	Value.	
Azores and Madeira Islands	.....	.....	.....	233	$167	.....	$72	.....	$86	$325
Belgium	.....	5,990	$32,705	.....	.....	.....	28,718	.....	.....	61,423
Denmark	$1,539	1	4	1	4	$506	.....	.....	6,006	8,059
France	31,905	577,715	2,120,031	55,076	105,570	36,582	901,013	$49,438	910,898	4,155,437
Greece	2	.....	.....	.....	.....	.....	2,000	.....	1,073	3,075
Iceland and Faroe Islands	80	2,627	5,868	12,238	9,546	85	.....	31	1,223	16,833
Italy	2,541	.....	.....	.....	.....	21,905	5,426	283	229,308	259,463
Netherlands	.....	.....	.....	.....	.....	.....	215	.....	.....	215
Norway	27,672	12	81	5	8	900	6,668	300	4,650	40,279
Portugal	4,828	.....	.....	322	425	1,057	6,918	1,636	5,367	20,231
Russia in Europe	.....	1,848	9,240	.....	.....	.....	211	.....	.....	9,451
Spain	4,393	460	2,029	3,656	1,812	6,382	24,454	.....	6,923	45,993
Sweden	.....	.....	.....	.....	.....	.....	18,825	.....	.....	18,825
Switzerland	4,400	.....	.....	.....	.....	.....	.....	2,467	7,172	14,039
United Kingdom—England	144,724	56,243	232,983	20,050	24,140	64,268	198,022	19,665	718,118	1,401,920
*TOTALS, EUROPE	$222,084	644,896	$2,402,941	91,581	$141,672	$131,685	$1,192,542	$73,820	$1,890,824	$6,055,568
Fiscal year, 1917-18	$409,557	35,022	$77,912	1,466,866	$744,122	.....	$1,977,029	$235,941	$1,757,353	$5,201,914
Fiscal year, 1916-17	$23,273	21,897	53,972	1,011,894	484,379	.....	1,764,240	187,187	1,589,556	4,602,607
Fiscal year, 1915-16	311,454	257,219	561,368	1,727,781	1,769,297	.....	2,745,450	247,537	1,818,139	7,453,245
Fiscal year, 1914-15	936,220	532,215	1,384,936	1,415,939	695,089	.....	10,992,184	1,991,572	3,971,250	19,971,251
Fiscal year, 1913-14	796,165	460,502	1,095,278	2,404,052	1,081,829	.....	3,480,114	1,549,094	3,697,306	11,699,786
Fiscal year, 1912-13	526,439	1,391,038	4,384,715	298,064	158,865	$213,612	1,460,518	157,191	2,599,413	9,500,763
1918, July to December 1	98,136	256,446	1,091,613	62,519	111,263	21,375	584,014	69,513	897,658	2,853,572

*Calendar year 1918.

BELGIUM.

Equivalents.—Franc, 19 cents; kilo, 2.2 pounds.

CRUDE RUBBER, ETC.

Tariff No.		Duty in Francs.
10.	Raw rubber	Free.

BELTING, HOSE AND PACKING.

33.	Machine belting ..... 100 *kilos*	30.00
54b.	Asbestos, felt, washers, plates, plaited cord and tissues of asbestos, combined or not with rubber. Tubes and pipes of rubber, combined or not with other material 5%	*ad. val*

TIRES.

Ex 10.	Tires (including tires of rubber combined with other material, rubber predominating in weight):	
	Solid tires ..... 100 *kilos*	65.00
	Pneumatic tires:	
	Covers [1] for automobiles and motor cycles:	
	With studded leather band ..... 100 *kilos*	130.00
	Other	116.00
	Covers [2] for other vehicles, weighing each:	
	Less than 600 grams ..... 100 *kilos*	90.00
	600 Grams and over ..... 100 *kilos*	60.00
	Inner tubes for automobiles and motor cycles ... 100 *kilos*	170.00
	For other vehicles, including complete single-tube pneumatic tires for racing cycles, composed of a cover and inner tube combined ..... 100 *kilos*	150.00

OTHER GOODS.

10.	Manufactured goods of rubber not elsewhere mentioned. 10%	*ad. val*
Ex 27.	(7) Hosiery mixed with silk, including hosiery composed of silk and 50 per cent or less of rubber:	
	Gloves and mittens ..... 100 *kilos*	450.00
	Articles not specially mentioned, containing:	
	Up to 20 per cent of silk:	
	Unornamented ..... 100 *kilos*	200.00
	Ornamented ..... 100 *kilos*	100.00

Tariff No.		Duty in Francs.
	Over 20 per cent of silk:	
	Unornamented ..... 100 *kilos*	400.00
	Ornamented ..... 100 *kilos*	500.00
33.	Tissues impregnated with rubber, lined or not with felt, specially manufactured for making card fillets, are duty free, under the denominations Machines, Implements and Tools. Imports of these tissues can take place only through the Custom-houses designated for the purpose by the Minister of Finance, and subject to the importer's proving to the satisfaction of the Customs that the tissues are really intended for the above-mentioned use. Electric submarine and underground cables are included in Machines.	
64.	Elastic tissues of cotton, silk and other material, cotton predominating in weight ..... 100 *kilos*	320.00

[1] Treads, protectors, etc., when composed mainly of rubber, are treated as complete covers.

BULGARIA.

Equivalents.—Lev, 19 cents; kilo, 2.2 pounds; G., Germany.

Tariff No.	CRUDE RUBBER, ETC.	General Tariff.
307.	India rubber and gutta percha, raw or refined.....	Free.
	BELTING, HOSE AND PACKING.	
313.	Tubes, belts, valves and other manufactures of soft rubber or gutta percha:	
	(a) Pure or combined with tissues or common materials ..... 100 *kilos*	50.00
	(b) Mixed with other fine materials..... 100 *kilos*	200.00
	This number includes tire tubes and tire covers for automobiles and cycles (G.)	
	BOOTS AND SHOES.	
312.	(a) Goloshes ..... 100 *kilos*	100.00
	(b) All other rubber footwear..... 100 *kilos*	200.00
	OTHER GOODS.	
308.	Unvulcanized rubber in sheets, films, slabs, strips; vulcanized rubber thread ..... 100 *kilos*	100.00
309.	Elastic tissues:	
	(a) Stuffs, bands, ribbons..... 100 *kilos*	120.00
	(b) Made up articles..... 100 *kilos*	150.00
	Ad. No. 309.—This headline includes elastic strips for elastic boots or shoes, as well as all articles in which elastic fabric predominates, even if combined with other materials, such as braces, garters, ribbons, cords, straps, etc. Elastic articles under (a) and (b), combined with silk, shall pay a surtax of 50 per cent.	
310.	Fabrics impregnated or coated with rubber, or with rubber sheets inserted ..... 100 *kilos*	150.00
311.	Clothing and other made up articles and manufactures of rubber, or of tissues impregnated or coated with rubber ..... 100 *kilos*	300.00
	Articles combined with silk pay a surtax of 50 per cent.	
314.	Manufactures of hard rubber, such as buttons, combs, cigarette holders, pins, boxes, etc.:	
	(a) Pure or combined with other common materials ..... 100 *kilos*	350.00
	(b) Combined with fine materials..... 100 *kilos*	700.00

General note.—Balata, gutta percha, and ebonite and articles manufactured of these materials are dutiable as india rubber and articles of india rubber.

DENMARK.

Equivalents.—Krone, 26.3 cents; kilo, 2.2 pounds.

MANUFACTURES OF INDIA RUBBER, GUTTA PERCHA, ETC.

Tariff No.		Duties in Kroner.
64.	Boots and shoes, cycle and other tire covers, hose pipes, in combination with textile materials..... *kilo*	0.50
	Ribbons, blocks, edgings, sheets and disks, with or without perforations, belts, rings, tubes, hose, cords, strings, bars, rolls, mats, carpets, horse-shoes, corks, soles, springs and buffers for vehicles, and other similar simple manufactures:	
65.	In combination with textile materials or with other dutiable materials and not elsewhere tariffed..... *kilo*	0.16
66.	Otherwise	Free.
	Other manufactures ..... *kilo*	0.70
	Tare.—Fancy goods or small wares, in cardboard or wooden boxes not generally sold with the goods in retail trade, 20%.	
	Otherwise, according to investigation.	
	Wax cloth and textile goods impregnated, coated or similarly treated with rubber, gutta percha:	
	If the Customs Department can determine the nature of the textile material:	
112.	If the material is jute only..... *kilo*	0.09
113.	If the material is wholly or in part silk..... *kilo*	3.00
	Other kinds, dutiable as the material.	
114.	In other cases.....	0.70

FRANCE.

Tariff No.	INDIA RUBBER, ETC.	Rates of Duty in Dollars per 100 Lbs. General Tariff.	Rates of Duty in Dollars per 100 Lbs. Minimum Tariff.
620.	India rubber and gutta percha manufactures:		
	Sheets of pure rubber, not vulcanized.....	2.89	[1]1.92
	*Threads of vulcanized rubber:		
	3 mm. or less in thickness or diameter.....	0.79	[1]Free
	Other	3.42	[1]2.27
	Elastic fabrics:		
	With threads of gold or silver, or of any textile fiber other than silk, or artificial silk.....	44.64	29.77
	With threads of silk or artificial silk, combined or not with other materials:		
	Less than 20 mm. and more than 45 mm. in width	44.64	29.77
	Other widths	89.30	59.53
	Rubberized fabrics in pieces, weighing per square meter:		
	800 grams or more.....	17.46	11.62
	Over 400 and less than 800 grams.....	33.27	22.46
	400 grams or less, containing in the warp and woof in a space 5 mm. square:		
	Less than 44 threads.....	49.89	33.27
	44 threads or more.....	99.81	66.54
	Articles made of rubberized fabrics weighing 400 grams or less per square meter and containing in the warp and woof in a space 5 mm. square 44 threads or more.....	110.45	66.96
	[2]Clothing, accessories for clothing, and ready-made articles, other than those specified below:		
	Dress shields:		
	Of rubber sheet without cloth.....	18.38	12.25
	Of rubberized fabric or of rubber sheet combined with any fabric other than silk or artificial silk	46.56	30.64
	Of rubber sheet combined with fabric of silk, natural or artificial, pure or mixed.....	62.51	41.66
	Suspenders, garters, belts:		
	Of any textile yarn, other than silk or artificial silk	45.96	30.64
	Of silk, natural or artificial, combined or not with any other material.....	53.14	36.76
	Other	65.66	43.78
	Special rubberized fabrics, jaccards, not set:		
	Without felt	22.05	14.71
	With felt	25.22	16.37
	Footwear of rubberized fabric, lined with felt, wool, or any cloth composed partly of wool....	27.57	18.37
	Footwear of rubberized fabric, lined with cotton, hemp or flax cloth (*bains de mer*, caoutchoucs, etc.)	22.07	14.70
	Footwear with soles wholly of rubber...*per pair*	0.18	0.125
	Pneumatic tires, casings, inner tubes.....	17.07	11.37
	Brake shoes, solid tires, rough, further manufactured or finished.....	11.37	9.10
	Tires, casings and inner tubes, for cycles, rough, further manufactured or finished—*dutiable as parts of cycles.* (Duty to be multiplied by 1.3.)		
	Belting, tubes, valves and other articles of rubber or gutta percha, pure or mixed, hard or, soft, combined or not with cloth or other materials	13.78	9.19
	(Imports originating in the United States and Porto Rico)	11.82	.....

[1] Applies to imports from the United States and Porto Rico. If not otherwise indicated, imports originating in the United States and Porto Rico are dutiable under the General Tariff. Duty is levied on net weight, when the rate is over $2.

[2] Articles of clothing that are stitched, glued, or stuck together are dutiable as made up articles.

GREAT BRITAIN.

	Rubber and manufactures of rubber.....	Free

GREECE.

Equivalents.—Drachma, 19.2 cents (nominal value); oke, 2.8 pounds avoirdupois; dramion, 0.111 ounce; n. e. s., not elsewhere specified.

Tariff No.	CRUDE RUBBER, ETC.	General Tariff, Drachmas.	Conventional Tariff, Drachmas.
325*a*.	Rubber and gutta percha, raw or refined.....	Free.	....
b.	Threads of rubber or gutta percha.....	Free.	....
c.	Pieces, sheets, bands, bars, pipes, etc., of rubber and gutta percha, mixed or not with other materials, and hat rims of cotton steeped in gum.....	Free.	....
d.	Diving suits	Free.	....
e.	Elastics for shoes or other purposes, mixed or not with other textile materials, and other similar articles ..... 100 *okes*	400.00	....
f.	Articles of rubber and gutta percha, n. e. s.....	725.00	400.00
g.	Sheets of rubber or gutta percha, pure or on tissue (except silk tissue) or impregnated tissues, or tissues stuck together by means of rubber or gutta percha..... 100 *okes*	400.00	200.00
h.	Ready made clothes and other articles of tissues mentioned in (*g*)..... 100 *okes*	700.00	450.00
i.	Tissues of animal or artificial silk, pure or mixed with other textile materials, impregnated, or stuck together by means of rubber or gutta percha..*oke*	40.00	20.00
j.	Ready made clothes and other articles of tissues mentioned in (*i*)..... *oke*	60.00	30.00
85.	Trusses, bandages, rubber nipples, probes, elastic stockings, suspenders, etc..... 100 *okes*	100.00	....

HOLLAND.

Equivalents.—Florin, 40 cents; kilo, 2.2 pounds.

There is an import duty of 5 per cent ad valorem on all manufactures of rubber and gutta percha.

ITALY.

Equivalents.—Lira, 19 cents; quintal, 100 kilos, 220 pounds.

CRUDE RUBBER AND RUBBER PARTLY MANUFACTURED.

Tariff No.		General Tariff, Lire.	Conventional Tariff, Lire.
365.	Rubber and gutta percha:		
	a. Raw, solid or liquid	Free.	.....
	b. In threads ..... *quintal*	75.00	....
	c. In sheets:		
	1. Cut ..... *quintal*	60.00	....
	2. Combined with tissues or inserted tissues ..... *quintal*	60.00	60.00
	3. Containing wire or wire gauze..... *quintal*	40.00	....
	4. Other, including plates of hard rubber ..... *quintal*	50.00	50.00
	d. In tubes or pipes:		
	1. Of cut sheet..... *quintal*	60.00	....
	2. Combined with tissues or with inserted tissue ..... *quintal*	60.00	....
	3. Other	....	40.00

BELTING.

366.	Belting of rubber or gutta percha combined with tissue or with inserted tissue..... *quintal*	60.00	....

BOOTS AND SHOES.

368.	Footwear of rubber:		
	a. Lined, covered or trimmed with another material ..... 100 *pairs*	200.00	[1]125.00A.G.
	b. Other ..... *quintal*	50.00	50.00
267.	(2) Footwear of cotton tissue with rubber soles furnished with a rubber strip by means of which the soles are united to the uppers.....100 *pairs*	....	[2]100.00A.

[1]Convention with Austria and Germany.
[2]Convention with Austria.

OTHER GOODS.

367.	Gummed tissues in the piece:		
	(a) For manufacturing card clothing.....*quintal* (The duty fixed for the tissues of this description only applies when these goods are imported by manufacturers of card clothing subject to compliance with formalities to be laid down by the Minister of Finance.)	20.00	....
	(b) Other (duty on the tissue according to kind)		
369.	Elastic trimmings, ribbons and tissues.....*quintal*	140.00	130.00
370.	Clothing and articles for travel—mixed with tissues.	Duty on tissues with addition of 50%	....
	1. Mixed with tissues of cotton and silk.....	....	Duty on tissue with addition of 40% (G.)
	2. Mixed with tissues of wood.....	....	Duty on tissues with addition of 35% (G.)
371.	Articles of rubber and gutta percha not mentioned:		
	a. Of cut sheet.....*quintal*	60.00	....
	b. Mixed with tissues.....*quintal*	60.00	[3]60.00G.
	c. Others, including articles of hard rubber not specified ..... *quintal*	50.00	50.00

[3]The duty of 60 lire is expressly chargeable by the treaty with Germany for tires, inner tubes, and other coverings of cycle wheels, and by the treaty with Austria for all kinds of carriage tires of rubber or gutta percha mixed with tissues.

NORWAY.

Equivalents.—Krone, 26.6 cents; kilo, 2.2 pounds.

Tariff No.		Duty. Maximum. Kroner.	Duty. Minimum. Kroner.
	CRUDE RUBBER, ETC.		
216.	3. *b.* India rubber, gutta percha, balata.....	Free	.....
217.	4. India rubber, gutta percha, manufactured:		
	a. In sheets, including rubbered paper, rods, cards or threads, hose cables, blocks, buffers and rollers, even when combined with thread or tissues ..... *kilo*	Free	0.40
218.	*b.* Soles, rings, floor mats, pads for horseshoes, even when thread or tissues are inlaid in these articles ..... *kilo*	0.30	0.40
219.	*c.* Goloshes and other footwear..... *kilo*	1.00	1.30
220.	*d.* [1]Other not specially mentioned..... *kilo*	1.00	1.30

[1]No reduction allowed for weight of boxes, cards or paper wrappers.

PORTUGAL.

Equivalents.—Escudo, $1.06; kilo, 2.2. pounds.

RUBBER, ETC., CRUDE AND MANUFACTURED.

Tariff No.		Rates of Duty, Escudos.
47.	Rubber, gutta percha, ebonite and similar composition, crude and prepared..... *kilo*	0.015
295.	Rubber or gutta percha in waterproof or elastic silk tissues ..... *kilo*	2.50
	Surtax in addition..... *kilo*	0.50
296.	In waterproof or elastic woolen tissues..... *kilo*	1.50
297.	In waterproof or elastic cotton or linen issues. *kilo*	1.00
314A.*b.*	Corsets of mercerized thread combined with rubber or gutta percha..... *each*	2.00
	Surtax in addition..... *each*	1.50
440.	Rubber and gutta percha, manufactured, not elsewhere mentioned..... *kilo*	0.60
441.	Combs ..... *kilo*	2,00
442.	Tubes and thread..... *kilo*	0.025
557.	Insulated wire..... *kilo*	0.04
	Ribbons, and belts thereof, all kinds, even combined with elastic, gutta percha, etc.:	
17.	(a) Of silk, pure or mixed with metallic thread. *kilo*	10.00
18.	(b) Of half silk..... *kilo*	5.50
19.	(c) Of wool..... *kilo*	1.60
20a.	(d) Other ..... *kilo*	1.40
	Note 2.—In the case of (c) and (d) the weight assessed for duty shall include that of spools, boxes, paper wrappers and similar immediate packing.	
	Clothing and made-up articles of tissue not specially mentioned in the tariff:	
	I. Impregnated or coated with oil, varnish, rubber, etc., or manufactured of such stuff:	
290.	*a.* When the tissue is wholly or partly of silk ..... *kilo*	6.00
291.	*b.* When the tissue is wholly or partly of wool ..... *kilo*	2.60
292.	*c.* Other ..... *kilo*	1.10
394.	Machine belts and transmission belts of all kinds, and sewing machine belts.....*ad valorem*	8%
	Note.—Belts may be admitted free of duty if it is proved that similar articles are not manufactured in Norway.	
395.	Machine packing and engine cables.....	Free.
	Tissues:	
	I. Waterproof, painted, varnished, lacquered, impregnated or combined with rubber or gutta percha:	
694.	*a.* Emery cloth and sand cloth..... *kilo*	0.20
695.	*b.* Tarpaulins, other goods weighing 250 grams or more per square of half meter side. *kilo*	0.18
696.	*c.* Roller window blinds..... *kilo*	1.10
697.	*d.* Oilcloth and other goods, the stuff of which is wholly or partly silk..... *kilo*	2.50
698.	*e.* Other goods not enumerated in the four preceding numbers..... *kilo*	0.60
730*b.*	Outer covers for rubber tires for automobiles, all kinds ..... *kilo*	0.30

RUMANIA.

Equivalents.—10 cents; kilo. 2.2 pounds; g.w., gross weight.

Tariff. No.		General Tariff. Lei.	[1]Extra Tax of ¼%. Lei.
	CRUDE RUBBER, ETC.		
455.	Crude rubber and gutta percha, in bulk, and broken articles of rubber.....100 *kilos*, g.w.	0.50	1.50
	PASTES, ETC.		
456.	Solutions and pastes of rubber.....100 *kilos*, g.w.	5.00	2.00
	BELTING, HOSE AND PACKING.		
462.	Technical articles of rubber, combined or not with other materials, and machine belting combined or with cotton or other materials.....100 *kilos*	50.00	6.00
	BOOTS AND SHOES.		
79.	Boots and shoes of any materials, with or without rubber heels and soles.....100 *kilos*	650.00	7.50
461a.	Goloshes and tennis shoes.....100 *kilos*	120.00	5.00
	OTHER GOODS.		
392.	Braces, garters, belts, with or without rubber thread:		
	a. Plain, of cotton, wool or linen.....*kilo*	3.00	0.08
	b. Ornamented, of cotton, wool or linen.....*kilo*	5.00	0.10
	c. Of silk, pure or mixed, ornamented or not. *kilo*	10.00	0.30
394b.	Artificial flowers and parts of flowers of gutta percha, etc. ..... *kilo*	4.00	0.05
457.	Plates and sheets of rubber.....100 *kilos*	10.00	2.50
458.	The same combined with tissues, etc.....100 *kilos*	20.00	3.00
459.	Articles of rubber and rubber thread.....100 *kilos*	40.00	3.50
460.	The same combined with other materials, but not made up:		
	a. Threads, stuffs, bands, elastic ribbon of rubber threads, covered with common tensile materials, cotton, linen.....100 *kilos*	100.00	3.50
	b. The same covered with silk, pure or mixed with other textile.....100 *kilos* (*Note.*—Elastic ribbons with rubber threads covered with textile materials used in making garters, shall be taxed under No. 460 *a* or *b*, as the case may be, even though not containing rubber threads on the edges and having the appearance of ordinary ribbons.)	300.00	5.00
461.	*b.* Cloaks, cloth and other made up articles.100 *kilos* (Included are articles made from tissues coated with rubber or gutta percha on one side only, varnished or not, or from double tissues with intermediate layer of rubber or gutta percha.)	250.00	6.00
462.	All other articles of rubber combined or not with other materials, and intended for medical or professional use .....100 *kilos*	50.00	6.00
463.	Articles of vulcanized rubber, combined or not with other common materials, such as combs, vaporizers, rulers, paperweights, pads, articles of dress, and other similar wares.....100 *kilos*	240.00	7.00
750*c.*	Insulated cable and wire.....100 *kilos*	15.00	3.50
771.	[2]Toys .....100 *kilos*	85.00	3.00
809.	Chemicotechnical specialties:		
	b. Special rubber .....100 *kilos*	100.00	0.05

[1]A tax of ½ per cent is levied on the value of merchandise imported or exported through Rumanian ports.
[2]By convention the duty for Germany is 50.00 lei.

SERBIA.

Equivalents.—Dinar, 19 cents; kilo, 2.2 pounds.

Tariff No.		General Tariff, Dinars.	Conventional Tariff, Dinars.
	CRUDE RUBBER, ETC.		
100.	(i) Rubber, gutta percha, balata, substitutes, not manufactured	Free.	Free.
	PASTES, ETC.		
252.	Rubber and gutta percha cements.....100 *kilos*	12.00	....
392.	Soft rubber paste.....100 *kilos*	50.00	30.00
401.	Paste of hard rubber, vulcanized or not....100 *kilos*	100.00	30.00
	BOOTS AND SHOES.		
395.	Rubber boots and shoes, even combined with textile and other material.....100 *kilos*	250.00	140.00
	TIRES, ETC.		
394.	Rubber tires for carriage wheels, covers for same, wheels, etc. .....100 *kilos*	150.00	120.00A.
	OTHER GOODS.		
392.	Rubber, gutta percha, balata, refined, mixed or not with other material, colored, vulcanized or not, in pieces, plates or patent sheets, but not further manufactured .....100 *kilos*	50.00	30.00
393.	Rubber threads:		
	(i) Solely of rubber.....100 *kilos*	100.00	50.00
	(ii) Covered with other materials.....100 *kilos*	200.00	100.00
394.	Tubes, straps, strips; also tissues saturated or coated with rubber and gutta percha, with linings or layers of rubber and gutta percha, or with layers of tissues, even combined with common metals and their alloys.....100 *kilos*	150.00	120.00A.
396.	Floorcloths, even combined with other materials .....100 *kilos*	150.00	120.00
397.	Tissues, felt and knitted stuffs, coated or saturated with rubber or gutta percha or with a layer of rubber or gutta percha:		
	(i) Silk or half silks.....100 *kilos*	300.00	300.00
	(ii) Other textile goods.....100 *kilos*	200.00	130.00
398.	Articles not otherwise mentioned of soft or vulcanized rubber, also wholly or partly covered, or saturated with rubber:		
	(i) Solely of rubber or combined with common or fine material .....100 *kilos*	450.00	150.00
	(ii) With the finest materials.....100 *kilos*	600.00	300.00
	(iii) With precious metals:		
	a. With gold .....100 *kilos*	1,000.00	700.00
	b. With silver.....100 *kilos*	800.00	450.00
399.	Elastic tissues, knitted goods and trimmings of every kind if the yarns are of:		
	(i) Silk or half silk.....	300.00	220.00
	(ii) Other textile materials:		
	a. For shoemakers	150.00	120.00
	b. Other	200.00	170.00
	(*Note.*—Embroidered goods of this kind pay a surtax of 30 per cent.)		
400.	Tissues and other manufacturers of rubber, or of other stuffs, combined with rubber or gutta percha for technical purposes, not mentioned or included elsewhere .....100 *kilos*	60.00	36.00
	(*Note.*—Clothes and other goods of this kind made up with glue are dutiable as finished goods.)		
401.	Hard rubber or gutta percha in sheets, bars, threads, polished but not further manufactured; unmanufactured sheets combined with other materials; unwrought stamped wares.....100 *kilos*	100.00	30.00
402.	Tubes of hard rubber.....100 *kilos*	200.00	120.00
403.	All other goods of hard rubber and gutta percha, combined or not with other materials if thereby they do not come under a higher duty:		
	(i) Of rubber alone or combined with common or fine materials.....100 *kilos*	400.00	200.00
	(ii) With the finest materials.....100 *kilos*	600.00	300.00
	(iii) With precious metals:		
	a. With gold .....100 *kilos*	1,000.00	800.00
	b. With silver .....100 *kilos*	800.00	600.00
	(*Note.*—Goods of imitation rubber or gutta percha are duitable as if of rubber and gutta percha.)		

SPAIN.

Equivalents:—Peseta, 19 cents; kilo, 2.2 pounds; n. w., net weight; g. w., gross weight.

For the purpose of the application of the privileged treatment resulting from different commercial treaties and conventions in force the countries are divided into four groups:

Group 1. Countries bound by treaties at present in force:—Denmark, Norway, Netherlands and colonies, Portugal, Switzerland and Sweden.

Group 2. Countries entitled to all customs benefits, save such as are accorded to Portugal, Germany, Andorra, Annam, Austria-Hungary, Belgium, Bolivia, Bulgaria, Costa Rica, Egypt, United States and Porto Rico, Cuba, Chile, China, France and Algeria, Great Britain and colonies, Greece, Guatemala, Japan, Luxemburg, Morocco, Mexico, Nicaragua, Paraguay, Persia, Peru, Argentina, Rumania, Russia, Salvador, Servia, Siam, Tunis, Turkey, Uruguay and Venezuela.

Group 3. Nations entitled to benefits of duties of second tariff:—Colombia and Ecuador.

Group 4. Countries subject to duties in first tariff. All countries not enumerated in the foregoing groups.

In order that goods and produce of countries mentioned in groups 1, 2 and 3 marked with letter C, in the tariff, may enjoy benefit of the lowest rates of duty or, as the case may be, of those stipulated in the second tariff, it will be necessary to present a certificate of origin.

RUBBER, CRUDE OR PARTLY MANUFACTURED.

Tariff No.		First Tariff Pesetas.	Second Tariff Pesetas.
695.	Rubber, gutta percha and similar materials, raw or manufactured into threads (g. w.).....*kilo*	0.06	0.06
	BELTING, HOSE AND PACKING.		
696.	Hose pipes, tubes, rings and sheets, strengthened or not with iron or brass wire, cloth or other materials (n. w.).....*kilo*	2.00	1.30
697.	Belts, washers, packing, discs, valves, horseshoes, combined or not with other materials (n. w.)..*kilo*	3.00	2.00
	BOOTS AND SHOES.		
700.	Elastics for boots and shoes (n. w.).....*kilo*	3.00	2.70
	Treaty with Switzerland (n. w.).....	....	2.00
703.	Boots and shoes, combined or not with other materials, except leather (n. w).....*kilo*	4.00	3.00
	TIRES.		
697.	Solid tires of rubber for carriages (n. w.).....*kilo*	3.00	2.00
698.	Solid tires of rubber, with metal armor (n. w.)..*kilo*	3.00	1.20
699.	Covers or inner tubes for all vehicles (n. w.)....*kilo*	5.00	2.70
	OTHER GOODS.		
528.	Apparatus and instruments for use in medicine, surgery and laboratories (n. w.).....*kilo*	5.00	5.00
529.	Common gymnastic and orthopedic apparatus (n. w.) .....*kilo*	2.00	2.00
700.	Elastic braces, garters and similar articles (n. w.) .....*kilo*	3.00	2.70
	Treaty with Switzerland (n. w.).....*kilo*	....	2.00
701.	Waterproof tissues, in the piece or cut (n. w.)..*kilo*	5.00	3.60
702.	Waterproof and other articles of clothing, sewn or not (n. w.).....*kilo*	8.00	5.60
	(*Note* 100—By "waterproof tissues" is to be understood tissues coated on one or both sides with rubber, also those saturated inside with this material.)		
704.	All other rubber goods except instruments, toys and writing materials (n. w.).....*kilo*	6.00	4.00
707.	Toys and games (n. w.).....*kilo*	4.00	3.00
709.	Writing materials, not specially mentioned (n. w.) .....*kilo*	2.50	1.50

SWEDEN.

Equivalents:—Krona, 27 cents; kilo, 2.2 pounds.

Tariff No.		Duty in Kroner.
	CRUDE RUBBER, ETC.	
631.	India rubber, gutta percha, balata, unmanufactured; also regenerated rubber.....	Free.
	PASTES, ETC.	
632.	Rubber dissolved or in the form of paste (but not rolled into sheets or further manufactured), with or without admixture of other substances; also artificial soft rubber.....*kilo*	0.15
	BELTING, HOSE AND PACKING.	
1634.	Sheets not more than 10 millimeters thick having layers of textile material within or around them; other engine packing, insulating materials and packing of soft rubber combined with textile materials, metal or asbestos, or of textile or other material combined with rubber.....*kilo*	0.25
1635.	Hoof and other pads (buffers), sheets and engine packing, n. e. s.....*kilo*	0.50
	Hose and pipes, even if cut in lengths and finished, n. e. s.:	
637.	Spiral piping and protected piping, even if provided with couplings or other fittings.....*kilo*	0.30
638.	Hose of cotton, hemp or linen impregnated or not; and coated internally with a thin layer of rubber not more than 2 millimeters thick...	Free.
1639.	Other, combined or not with other substances, including so-called inner tubes, unfitted or not, joined without valve patches and valves....*kilo*	0.50
1640.	Belting of rubber, gutta percha or balata, combined or not with textile materials.....*kilo*	0.35
1645.	Hard rubber engine packing.....*kilo*	0.50
	BOOTS AND SHOES.	
641.	Rubber boots and shoes.....*kilo*	1.20
	TIRES, ETC.	
1636.	Solid tires, even if in lengths.....*kilo*	0.80
1642.	Rubber parts of cycle and motor cycles, n. e. s., even if combined with other substances, such as outer covers or parts thereof, rubber parts of pedals and brakes.....*kilo*	1.60
	OTHER GOODS.	
1636.	Mats, stoppers, rings for sewing machines, valves, balls for valves and rubber goods n. e. s., for industrial purposes, all combined or not with other materials; cords.....*kilo*	0.80
1643.	Other articles n. e. s., of soft rubber, combined or not with other materials, such as gloves, pails, nipples, ice bags, surgical appliances, and erasers.*kilo*	1.20
	(*Note.*—Manufactures of gutta percha, balata and artificial soft rubber, are treated as manufactures of soft rubber.)	
	MANUFACTURES OF HARD RUBBER, COMBINED OR NOT WITH OTHER MATERIALS.	
1644.	Blocks and sheets, even if in pieces cut out and finished .....*kilo*	0.50
1645.	Rods, threads, pipes even if in pieces, cut out and finished .....*kilo*	0.50

Tariff No.		Duty in Kroner.
646.	Knife handles and materials therefor	Free.
[1]647.	Other articles, n. e. s., of hard rubber, combined or not with other substances, such as surgical appliances, combs and the like.....*Kilo* (*Note to Nos.* 634-47.—No deduction from the weight is allowed for boxes, paper and similar coverings, nor for cards.)	1.20
648.	Waste rubber and worn-out articles of rubber	Free.

A (1) placed before a number means that the whole is conventionalized. unless otherwise stated; the conventional provisions result from the commercial treaty concluded with Germany on May 2, 1911.

TARE ALLOWANCE.

The tare shall be calculated in accordance with the following percentages, unless the packing is to be included in the dutiable weight of the goods:

For wrappers of a single tissue	2%
For wrappings of double tissues or mats	3%
For barrels or cases	12%
For boxes or bottles of sheet metal	10%
For boxes or bottles of lead, iron or copper	20%
For bottles of glass and flagons or jars of earthenware	40%

SWITZERLAND.

Equivalents.—Franc, 19 cents; quintal, 220 pounds.

Tariff No.		General Tariff. Rates per Quintal. Francs.	Conventional Tariff. Rates per Quintal. Francs.
	CRUDE RUBBER, ETC.		
516.	Crude rubber and gutta percha, "Patent Platten," not vulcanized; rubber and gutta percha waste	Free	Free
	BELTING, HOSE AND PACKING.		
517.	Joint rings for w. c. piping	5.00	1.00
518.	Hose, tubes, pipes	10.00	5.00
522.	Hose and tubes with metal joints	20.00	8.00
523.	Belting	30.00	20.00
635.	Asbestos and rubber packing, klingerite rings	.....	12.00
	BOOTS AND SHOES.		
191.	Roughly shaped parts of boots and shoes of rubber or gutta percha	45.00	40.00
198.	Boots and shoes of rubber combined with other materials, except leather	40.00	30.00
	DRUGGISTS' SUNDRIES.		
528.	Waterproof sheeting for sanitary purposes	40.00	30.00
529.	Rubber sponges; molded articles of rubber	40.00	25.00
938.	Surgical and medical instruments and apparatus, including inhalers	40.00	16.00
939.	Trusses, corsets, dorsal and thigh bandages, splints; orthopedic apparatus; dental mastic, sheets of rubber for antificial palates and gums, teething pads worn around the neck, syringes of all kinds; irrigateurs, clyster pumps, etc.	50.00	40.00
1161.	Elastic stockings	50.00	40.00
	OTHER GOODS.		
517.	Rubber or gutta percha in strips, sheets, plates, plugs, molded articles, threads, balls, rods, rings of rubber without internal layers of another material	5.00	1.00
519.	Threads for elastic tissue	Free	.....
520.	Carpets, mats, etc., with internal layers of metal or tissue	40.00	20.00
521.	Plates, rings, balls, strips, bands, etc. (Ad. 517-521. Vents, valves, blocks of rubber for brakes; plates of rubber.)	10.00	5.00
524.	Carpets and mats	40.00	20.00
525.	Gummed tissues for industrial purposes, stuffs for cards, cylinder covers for printing, insulating stuffs and tapes	.....	1.00
526.	Rubbered stuffs (double) for cart tilts, etc.	.....	30.00
527.	Elastic tissues of all kinds for shoes, gloves, braces, garters, etc.	.....	40.00
528.	Rubber coated fabrics and other materials on which rubber is applied	40.00	30.00
529.	Articles not otherwise mentioned, including rubbered fabrics for waterproof overcoats; clothing for laborers working in water; rubber hooters for automobiles; rubber shoes for ladders; molded articles of rubber (Ad. 516-529. Galalith and manufactures thereof; "stabilite" wares.)	40.00	25.00
	ELECTRICAL CABLES AND WIRE; CORE INSULATED WITH RUBBER; GUTTA PERCHA, ETC., NOT COVERED WITH TEXTILE MATERIALS, TWISTED OR PLAITED.		
824.	Cables without lead sheathing or iron armature; insulated wires (Ad. 824. Copper wire covered with textile materials, wound or braided.)	30.00	18.00
825.	Cables with lead sheathing	15.00	12.00
826.	Cables with lead sheathing and iron armature, core insulated with rubber, gutta percha or paper covered with thread or silk twisted or plaited	15.00	12.00
827.	Cables without lead sheathing	30.00	15.00
828.	Cables with lead sheathing	15.00	12.00
1145.	Stoppers	60.00	[1]30.00
1159b.	Rubber stamps, rubber erasers	30.00	25.00

[1]Italy, 40 francs.

TURKEY.

All imported goods, except gold and silver articles, precious stones, tobacco, are liable to a duty of 11 per cent.

Government Standard Specifications for Rubber Tires, Tire Repairs and Accessories—II.[1]

SOLID MOTOR TIRES.

Specification GS 1030.

GENERAL. (*a*) This specification covers requirements for "pressed on" type tires provided with the standard channel base band of tire manufacturers, and shall be suitable for pressing on to S. A. E. standard felloe bands for commercial-sized wheels on bands built to S. A. E. tolerance for artillery wheels.

(*b*) Full-sized drawings shall be submitted with proposals showing the exact section of the tires which it is proposed to furnish. Sample section of the actual tire in each size shall also be submitted.

(*c*) See General Specifications for Tires[1], which are a part of hereof.

CONSTRUCTION.

The total weight of tire, weight of rubber, weight of steel base band, together with the total sectional area of tread rubber in tires and also the area of tread rubber above the tops of steel channels must be definitely stated in proposals, and this data will be given due consideration in connection with the prices submitted.

Tires 10 inches in width and larger shall be provided with approved grooving on face of tire.

The tire base band shall be made of open-hearth steel and rolled to approximate finished dimensions. Chemical analysis shall be as follows:

Carbon, 0.12 to 0.22—0.17 desired; manganese, 0.35 to 0.55; phosphorus, less than 0.04; sulphur, less than 0.05.

Base bands are to be electrically welded. They shall be truly circular and free from appreciable warp.

Dimensions of base bands: The inside circumference of base bands of tires of standard S. A. E. commercial sizes shall be in accordance with standard practice of tire manufacturers, but manufacturer must guarantee tire shall not come off when applied to standard S. A. E. wheels. Tires made for artillery wheels shall have the inside circumference of base bands made in accordance with dimensions and tolerance given on Ordnance Department drawings.

To determine the effectiveness of the welding process used, pieces of base band metal not less than 8 inches in length will be welded together and turned down to a standard specimen and three such samples containing welds pulled in a testing machine. The total pull required to separate each of the three welds shall be more than 45,000 pounds per square inch of cross section.

In order to determine whether the base bands are being properly welded in production, the inspector may, from time to time, require a weld on the finished tires to be tested in the manner described above. The strength of the welds in production shall be not less than 45,000 pounds per square inch of the section as tested above.

MARKING, WRAPPING AND PACKING.

(*a*) All tires shall have molded on the side of the tread rubber the words "U.S.A." and the tire size, i. e., the width and diameter and also the rubber compound or specification number,

[1] The General Specifications referred to in these specifications were published on page 351, in THE INDIA RUBBER WORLD, March 1, 1920.

the tire serial number, month and year of manufacture, and the name of the manufacturer.

(*b*) The tires shall also have marked, by stamping deeply into the steel tire channel, the tire serial number and a symbol representing the name of the manufacturer. The above data shall be stamped under the overhanging edge of the steel channel. In case of artillery tires they shall be marked according to blue print submitted.

(*c*) PAINTING: Paint metal bases with rust-resisting paint.

(*d*) WRAPPING: No wrapping required.

(*e*) MARKING: Shipping instructions to be shown on printed label pasted to inside of tire band and covered with a protective coating of silicate of soda over the label.

MATERIAL.

See General Specifications.

(*a*) RUBBER COMPOUND: The rubber compound shall contain not less than 65 per cent, by volume, of best quality new rubber. If reclaimed rubber or mineral rubber is used, it must be in addition to the 65 per cent of new rubber required, and the manufacturer must declare the amount and kind of reclaimed rubber or rubber substitutes used in his formula. The use of "refined" or ground vulcanized rubber in the compound will not be permitted. Compound shall be free from saponifiable oils or anything made therefrom.

(*a*) The total sulphur shall not be more than 8 per cent of the weight of the new rubber used, except as follows:

If the manufacturer desires to use sulphur-bearing fillers, thereby causing the total sulphur to be over 8 per cent of the weight of the new rubber, he may do so, but shall submit for analysis a sample of the finished unvulcanized stock. Such stock shall not show a sulphur content in the acetone extract of over 8 per cent of the weight of new rubber used.

TESTS.

See General Specifications.

RUBBER COMPOUND: (*a*) PHYSICAL—

Specific Gravity.	1.40 or Over.	Below 1.40.
Tensile strength	1,800	2,000
Ultimate elongation ..... inches	1-4½	1-4¼
Per cent set 2 minutes after breaking.....	40	40

Above based on the average of not less than five samples.

(*b*) AGING. Prepare five flat samples of rubber to be tested; place in an oven for two hours at a temperature of 228 degrees F. After removing from the oven, allow to stand for 24 hours and determine elongation. The reduction in elongation at the breaking point shall be not over 35 per cent.

(*c*) ADHESION. The adhesion test shall be made as follows:

Place tire horizontally on platen of tire-applying press, the tire being supported above the lower platen of the press on a steel band having the same diameter as the base of the tire to be tested. Place on the upper side of the tread a band ½-inch thick with inside diameter 1½ inches larger than outside diameter of flange of base band. The corners of the band to be rounded with ¼-inch radius. For the tire to pass successfully the hard rubber must not break loose from the base.

In making ring-adhesion tests of solid rubber tires the applied pressure on a 36-inch tire should be 17 tons and on a 40-inch tire 19 tons. The pressure used on tires of other diameters should be in proportion to these pressures.

Standardization of minimum sectional areas, hard base pressed-on solid rubber truck tires. The following standard of minimum areas is adopted for the various widths of solid rubber tires:

Inches.	Square Inches.
3½	6.75
4	7.75
5	10.75
6	13.75
7	16.75
8	19.75
10	25.75
12	31.75
14	38.75

The areas hereinabove given refer to the sectional areas, including both the hard and soft rubber of finished tires, on standard base bands.

(*d*) REBOUND. The rebound shall not be less than 50 as measured on a Whitney rebound instrument. The tire under test shall be held at 70 degrees F. for a period of 24 hours before testing and the instrument shall be mounted rigidly in a vertical position. The tire shall be hung on a solid anvil below the instrument.

(*e*) ROAD TEST. Manufacturer shall maintain at least one truck, used exclusively for test work, which shall average at least 500 truck miles per week, and a sufficient number of tires, at least four, have averaged on rear wheels, at least 7,000 miles.

Test on tire of 5-inch cross-section size, or larger, will be considered as representative of all solid tire cross-section sizes.

INSPECTION.

See General Specifications.

One tire in each lot of 500 (the tire to be selected at random by the inspector) shall be tested, and if the tire fulfills all the requirements of the specifications, the lot of tires represented by it will be accepted, including the tire on which tests have been made. Failure to conform to the specifications in any particular, the lot of tires represented by it, including the tire on which tests have been made, will be rejected. If, however, the maker of the tires demands a further test, three more tires from the lot rejected will be selected by the inspector, and if all tires are found satisfactory, the lot of tires represented by the tires subjected to test will be accepted, the manufacturer to bear the cost of the tires upon which tests have been conducted. If any tire fails in the latter tests, the whole lot will be rejected.

CLINCHER BICYCLE TIRES.

	Minimum.
No. GS 1000	28 by 1¼ inches.
No. GS 1001	28 by 1⅜ inches.

GENERAL.

(*a*) This specification covers the requirements for bicycle pneumatic castings of fabric construction of the sizes 28 by 1¼ inches and 28 by 1⅜ inches. They shall be of the manufacturers standard, nonskid, double clincher type and satisfactorily fit, the standard 28 by 1½ inch single clinch all steel bicycle rim.

(*b*) See General Specifications for Tires[1] which are a part hereof.

CONSTRUCTION.

See General Specifications.

(*a*) Carcass of the casing shall consist of two plies of fabric frictioned both sides.

(*b*) The tread of the casing shall not be less than 0.120-inch thick and the side wall not less than 0.032-inch thick when measured on the cured casing.

MARKING, WRAPPING AND PACKING.

See General Specifications.

MATERIAL.

(*a*) Fabric shall be square-woven (26 by 26).

(*b*) RUBBER COMPOUNDS:

		New Rubber, Per Cent. Volume.
Tread	minimum	55
Side wall	do	55
Friction	do	65

TESTS.

(*a*) MEASUREMENTS: The cross-section of diameter of each tire inflated to 40 pounds shall not be less than 1-29/64 inches in 28 by 1½ inches and 1-37/64 inches in 28 by 1⅜ inches.

(*b*) FABRIC shall have a tensile strength for each warp and filling of not less than 110 pounds per inch or its physical equivalent or cords as approved.

(*c*) FRICTION: Friction between piles of fabric shall average not less than 10 pounds and between tread and plies or between side wall and plies shall average not less than 9 pounds.

(*d*) RUBBER COMPOUND:

	Tread. Minimum.	Side Wall. Minimum
Tensile strength	1,600	1,200
Ultimate elongation	2-10	2-10
Set:		
Stretch ..... inches	2-10	2-10
Set ..... per cent	25	25

INSPECTION.

See General Specifications.

[1]The General Specifications referred to in these specifications were published on page 351, in THE INDIA RUBBER WORLD, March 1, 1920.

PNEUMATIC MOTORCYCLE CASINGS.

	Minimum.
No. GS 1005	28 by 3 inches.
No. GS 1006	29 by 3½ inches.

GENERAL.

(*a*) This specification covers requirements for pneumatic motorcycle casings of fabric construction. Size 28 by 3 inches shall be designed to carry a load of 325 pounds when inflated to 40 pounds per square inch; size 29 by 3½ inches, a load of 400 pounds when inflated to 45 pounds per square inch; both designed for S.A.E. clincher motorcycle C.C. rim 28 by 3 inches.

(*b*) See General Specifications for tires which are a part hereof.

CONSTRUCTION.

See General Specifications.

(*a*) SPLICES on the first ply of fabric shall be gum stripped.

(*b*) CARCASS of casing shall consist of four separate plies of tire fabric, with friction coat on two sides and skim coat on one side. The gage of one ply frictioned on two sides and skim

coated on one shall be at least 0.043 inch. Each ply shall have not more than two splices which must be at least seven inches apart, and the splices in the casing shall be at least three inches apart; all measurements on the circumference of the casing.

(*c*) BEADS shall be constructed with a core filler as in standard commercial practice.

(*d*) Size 29 by 3½ inches shall have one chafing strip of square-woven fabric weighing not less than 8 ounces per square yard on each side of the casing and shall extend upward on the side of the casing at least ⅜ inch from the channel of the bead.

(*e*) There shall be a cushion of rubber compound applied over the fabric which shall be wider than the breaker. The minimum gage of this cushion shall be 0.0325 inch for size 28 by 3 inches; and 0.045 inch for size 29 by 3½ inches.

(*f*) Over the cushion there shall be at least one breaker strip of open-weave fabric made from long staple cotton weighing not less than 8 ounces per square yard, as used in standard commercial practice, coated on both sides with a rubber compound which shall insure a perfect union between the cushion and tread, after cure.

BREAKER STRIP for size 28 by 3 inches, minimum width, 1⅞ inches.

BREAKER STRIP for size 29 by 3½ inches, minimum width 2¼ inches.

(*g*) RUBBER DIMENSIONS:

Size ..... inches	28 by 3	29 by 3½
	Inches, Minimum.	
Thickness:		
Tread of casing in center.....	¼	⅜
Tread, exclusive of non-skid portion in center	¼	⅛
Side wall	0.045	0.050

(*h*) Flap shall be cemented inside of casing.

MARKING, WRAPPING AND PACKING.

See General Specifications.

MATERIAL.

See General Specifications.

(*a*) FABRIC must be square woven 23 by 23 from Egyptian long-staple cotton, or its physical equivalent as approved by the Government, weighing 17¼ ounces to the square yard.

(*b*) RUBBER COMPOUND:

	New rubber, per cent volume. Minimum.	Reclaimed rubber, per cent weight. Minimum.
Tread	65	....
Side wall	65	15
Friction	75	....
Cushion	75	....

TESTS.

See General Specifications.

(*a*) Cross sectional diameter of each tire inflated according to the recommended weight and load schedule of the S. A. E. shall be for 28 by 3 inches, minimum 2-15/16 inches, maximum 3-3/10 inches, and for 29 by 3½ inches, minimum 3-7/16 inches.

(*b*) Shall withstand water pressure without injury, as follows:

Size:	Minimum pressure.
28 by 3 inches.....	250 pounds
29 by 3½ inches.....	275 pounds

(*c*) FABRIC: Tensile strength, warp or filling, minimum, 165 pounds.

(*d*) FRICTION:

	Pounds.
Strength of union between plies of fabric.....minimum	16
Strength of union between breaker and tread.....minimum	28
Strength of union between breaker and cushion.....minimum	28
Strength of union between cushion and carcass.....minimum	16
Strength of union between side wall and carcass.....minimum	10

(*e*) RUBBER COMPOUND:

	Tread.	Side wall.
Tensile strength, minimum.....	2,200	1,500
Ultimate elongation, minimum..*inches*	2-11	2-11
Set:		
Stretch, minimum.....	2-10	2-10
Set .....*per cent*	25	25

(*f*) ROAD TESTS:

Manufacturer shall maintain at least one motorcycle used exclusively for test work which shall average at least 1,000 machine miles per machine per week, and a sufficient number of casings (not less than six) shall have averaged on the rear wheels at least 4,000 miles.

INSPECTION.

See General Specifications.

AUTOMOBILE TIRE ACCESSORIES.

See General Specifications for Tires[1], which are part hereof.

GS 1070—Blow-out Patches.

They are recommended only for emergency repairs. A vulcanized repair should be made as soon as possible.

Patches shall be made at least six-ply 7-ounce fabric, or its equivalent, as approved by the Government. Plies must be properly stepped down, according to good commercial practice. Two ears are required on all patches. The length of the patch must be according to the manufacturer's standard commercial practice. The 3-inch and 3½-inch must be designed for use with clincher fabric tires and the 4-inch, 4½-inch, and 5-inch must be of ample size for use with cord tires.

GS 1071—Cementless Patches.

They shall be of one standard size, 1½ inches in diameter. The gage and compound of the stock shall comply with the specification for cured back tube stock as given in the Repair Material Specification. Patches molded to a featheredge are preferred.

GS 1072—Reliners.

They are recommended only in case of extreme necessity. All sizes up to 4-inch shall be made of at least three plies, while 4-inch and larger must be made of at least four plies of 7-ounce fabric, or its equivalent, as approved by the Government. The plies shall be built up on the bias, and a lap of at least 6 inches is required and the edges properly stepped off on the sides and skived on the ends to insure against injury to the tube. Each size reliner must be designed so that its width will be such as to properly fit the standard tire of that size. This includes 3-inch and 3½-inch in fabric clincher and 4-inch or larger in cord tires. The edge must stop approximately ¾-inch above the toe of the bead.

GS 1073—Flaps.

Motorcycle flaps must be of the cemented-in type and equal in construction and quality to the flap supplied by the bidder on tires made to Government specifications.

Straight side-cord tire flaps must be of the floating type and equal in construction and quality to the flap supplied by the bidder on tires made to Government specifications.

GS 1074—Fabric Cord Patches.

These patches must be made according to the manufacturer's standard practice from carded Egyptian, combed peeler cotton fabric, or their physical equivalent, as approved by Government, weighing not less than 13 ounces nor more than 16 ounces per square yard.

The plies must be laid on the bias, frictioned or spread and skim-coated on both sides, equally to a minimum gage of 0.043-inch. The compound must fill the specification set forth in the repair material specifications covering friction, skim, cushion, and tube stocks.

All sizes up to 6-inch shall be four plies and 6-inch and above shall be six plies. The patch must be properly stepped down and preference will be given to gum-stripped ends to insure against injury to the tube. There shall be applied in the center of the back of the patch a padding not less than 1/16-inch thick. The minimum length and breadth of the padding shall not be less than the length of pad specified below.

The following sizes are standard and lengths required are given in table:

	Patch, length. Inches.	Length of pad. Inches.
No. GS 1074X1.—3½ and 4 inch.....	10	4
No. GS 1074X2.—4½ and 5 inch.....	11	5
No. GS 1074X3.—6 inch	12	6
No. GS 1074X4.—7 inch	13	7
No. GS 1074X5.—8 inch	14	8

[1]The General Specifications referred to in these specifications were published on page 351, in THE INDIA RUBBER WORLD, March 1, 1920.

VALVE ACCESSORIES.

No. GS 1060X1.

Valves: Schrader's 1936 or approved equivalent for motorcycle tubes.

No. GS 1060X2.

Schrader's 725 or approved equivalent for 3½ and 4-inch auto tubes.

No. GS 1060X3.

Schrader's 792 or approved equivalent for 4½ and 5-inch auto tubes.

No. GS 1060X4.

Schrader's 2033 or approved equivalent for 6-inch tubes and larger.

No. GS 1061X1.

Valve caps: Schrader's 880 or approved equivalent.

No. GS 1082X1.

Valve insides: Schrader's 1801 or approved equivalent.

GS 1082X1.

Tire gage: Schrader's straight Universal gage or approved equivalent for small cars or motorcycles.

GS 1083X1.

Schrader's right angle gauge or approved equivalent for large cars and pneumatic tired trucks.

GS 1084X1.

Pump connection: Schrader's Universal No. 2238 or approved equivalent.

GS 1085X1.

Deflating caps: Schrader's No. 1886 or approved equivalent.

GS 1086X1.

Valve repair tool: Schrader's No. 2395 or approved equivalent.

The power to approve equivalents is vested only in the Government.

REPAIR KITS.

GS 1090.

Repair kits shall be made up with the following material, packed in a round cardboard carton with tin ends and cover, approximately 2½ inches in diameter and 2½ inches deep.

It shall contain:

Six cementless patches.
Strip of cured back tube gum 2 by 8 inches.
Tube of cement 2½ by ½-inch diameter, or equivalent.
Piece of sandpaper 2 by 8 inches, or equivalent.
Two valve insides, Schrader's 1801 (GS 1082X1), or approved equivalent.
Two valve caps, Schrader's 880 (GS 1081X1), or approved equivalent.

Carton to be labeled as follows:

WAR DEPARTMENT STANDARD INNER TUBE REPAIR KIT.

DIRECTIONS.

For Temporary Tube Repairs.

For repairing small punctures use "Cementless Patches." Roughen the tube with sandpaper, then apply cement and allow to dry. Remove cloth from patch and apply. Tube can be used at once.

For repairing blowouts use combination repair stock. Roughen tube around cut with sandpaper, then apply coat of cement around cut inside and outside of tube. Allow to dry. Cut piece combination stock ¼-inch larger in all dimensions than cut and place inside of tube, bringing edges of cut together over center of stock. Apply another coat of cement outside of tube and allow to dry. Cut and place same size piece of combination stock on outside of tube over center of blow-out. Tube can be used immediately.

Note: Always remove cloth from patch and combination stock before applying and place cloth side next to tube.

REPAIR MATERIAL FOR PNEUMATIC TIRES.

See General Specifications for Tires[1], which are a part hereof.

GS 1091.

FABRICS (ONLY FOUR TYPES NECESSARY).

GS 1091X1.

SQUARE-WOVEN BUILDING FABRIC: This fabric shall be 17¼ ounces per square yard with an allowable variation of 3 per cent plus or minus. It shall be 23 by 23 weave. The fabric shall be made from long-staple cotton with a tensile strength for each warp and filling of at least 150 pounds per inch. Methods of testing to be the same as specified in the fabric casing specifications. The fabric shall be frictioned both sides and skim-coated one side to a minimum gage of 0.047-inch.

GS 1091X2.

CORD BUILDER FABRIC: This fabric shall be made from long-staple carded Egyptian or combed peeler cotton, or their physical equivalent, as approved by the Government, weighing not less than 13 nor more than 16 ounces per square yard. The cord fabric shall be frictioned or spread both sides and skim-coated equally on both sides to a gage of 0.050-inch.

GS 1091X3.

BEAD FABRIC, SQUARE WOVEN.—This fabric shall weigh at least 8 ounces per square yard. It shall be made from long-staple cotton and shall be frictioned both sides.

GS 1091X4.

BREAKER FABRIC.—This breaker shall be an open-weave fabric of at least 10 ounces per square yard. It shall be made from long-staple cotton. It shall be frictioned or spread and also skim-coated equally on both sides. The minimum gage shall be 0.070-inch.

GS 1092.

COMPOUNDS (ONLY THREE STOCKS NECESSARY).

GS 1092X1.

FRICTION, SEAM, CUSHION, AND TUBE REPAIR STOCK: (*a*) Specific gravity not to be over 1.30. These shall be made from and have the characteristics of a compound containing at least 65 per cent by volume of new rubber.

(*b*) Two tread stocks shall be used. There shall be a black stock of specific gravity not over 1.60 and a white or grey stock of specific gravity not over 1.90. The treads shall be made from and have the characteristics of a compound containing at least 50 per cent by volume of new rubber. The kind and quality of the reclaimed rubber must be declared when used. The tensile strength of a properly cured tread sample shall be 2,000 pounds per square inch, with a minimum elongation of 400 per cent (2 to 10 inches). The permanent set shall not exceed 30 per cent after an elongation of 350 per cent (2 to 9 inches).

(*c*) Side wall stocks. Use tread stock.

(*d*) Retread semi-cured bands. Use repair tread stock specifications.

(*e*) Cured-back tube stock. The uncured stocks used must fill the specifications for the friction coat and cushion stocks.

The gage of the raw gum shall be not less than 0.015.

The gage of the cured gum shall be not less than 0.032.

GS 1093.

CEMENTS (TWO CEMENTS ONLY).

GS 1093X1.

(*a*) Vulcanizing cement shall be made from a compound having a maximum specific gravity of 1.15 containing at least 75 per cent by volume of new rubber. It shall be dissolved in benzol. The rubber compound content by weight to be determined by evaporation and milled to constant weight, shall be not less than 17 per cent of the total weight of the cement.

GS 1093X2.

(*b*) Acid cure cement: This cement to be made from new rubber with no other ingredients than a benzol solvent. The pure rubber content weight to be determined by evaporation and milled to a constant weight, shall be not less than 6 per cent of the total weight of the cement. The acid solution used with this cement shall be 2 per cent monochloride of sulphur and 98 per cent benzol.

CURE.

The base cure on a 4-inch section for repair material should be based on 45 minutes at 50 pounds steam pressure, it being understood that cure is to be made under proper conditions.

VALVE BASES.

GS 1094.

Two sizes designated as large and small will be required. The standard commercial, after sample bases have been submitted to and approved by the Government, will be accepted.

AIR BAGS.

GS 1095.

The air bags shall be made according to the standard practice and design of the manufacturer. A sample section of the bag showing the end reinforcement and cross section of the bag must be submitted to the Government for approval. Bags must be tested with 100 pounds air pressure and show no leaks when immersed in water.

PRICES.

Repair materials will be purchased on a pound basis. For comparison of different quotations the specific gravity and price on the basis of volume must be submitted by the bidder in addition to the price on a weight basis, it being understood that the volume price shall be the price per square yard of the gage specified in the request for bid.

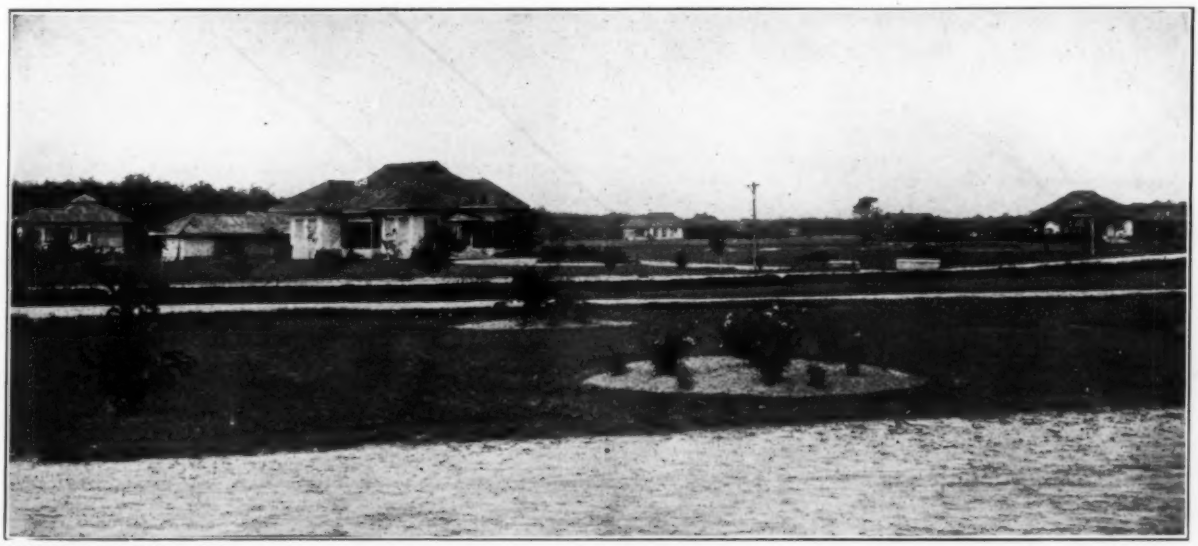
THE LANGEN (JAVA) RUBBER ESTATES CO., LIMITED, reports that of its 4,427 acres, 2,377 are planted with *Hevea* rubber and of these 1,979 acres are being tapped. The rubber yield for the fiscal year, closing with the end of August, 1919, was 700,222; the average net sale price was 1*s.* 9.1*d.* per pound, the cos of production, f. o. b. at port of shipment was 11.43*d.* per pound The estimated crop for 1919-1920 is 850,000 pounds. The ne profits were £28,297.

[1]The General Specifications referred to in these specifications were published on page 351, in THE INDIA RUBBER WORLD, March 1, 1920.

Life on a Sumatra Rubber Plantation.

The fascination which the strange lands of the Far East have held for the average American is taking on a more tangible form, now that travel and business are bringing Asia and the United States into closer contact. No article of commerce is doing more to bring this country into close touch with the mystic East than rubber. The rapid rise of the islands of the Indian Ocean to supremacy in crude rubber production, combined with the fact that America consumes nearly three-quarters of all the rubber grown there, has given many Americans an opportunity to look behind the scenes and become acquainted with the lands and peoples of that distant quarter of the globe.

Although the whole equatorial belt in that section is dotted with rubber plantations, representing a capital investment of nearly half a billion dollars, the thoughts of Americans naturally center on Sumatra, where one of America's greatest corporations has established a plantation so vast in area and so highly developed that it stands out as the greatest single plantation in the world. This is the plantation of the United States Rubber Co., comprising seventy square miles of growing trees, an enterprise marked throughout by a magnitude and an efficiency worthy of the best American traditions.



(United States Rubber Co.)

One-Story Bungalows, Central Park, Boenet, Sumatra.

Many young Americans, alive with the spirit of adventure, have wondered what opportunities this plantation field might hold for a youth in search of opportunity. Inquiries of this sort are constantly being received by the plantation executives. To all such, the company invariably replies that without technical training in rubber chemistry, soil chemistry or horticulture, there is almost no chance of getting a foothold. One of the requirements is that a man going there must be prepared to settle down with the idea of making his permanent home there.

The executive and technical staffs of the plantation are made up largely of Americans and Europeans, therefore the following description of the conditions in Sumatra is interesting and timely.

The first thing that strikes the American making his first visit to Sumatra is the intense humidity. The temperature does not get as high there as it does on our hottest days here, but for several weeks the humidity seems very oppressive. After a time one gets used to that, so much so that a cool breeze is uncomfortable and causes more worry about the occasional cool spots in the weather than about the heat. The perspiration flows so freely that colds must be guarded against, and after any violent exercise a sweater should be put on to avoid taking cold.

The next thing that attracts the attention of the newcomer is the density of the vegetation. The forests in the United States have open spaces among the trees, but in Sumatra the trees are covered with parasites and vines forming a solid wall, while the ground is covered with a mass of undergrowth. This superluxuriant vegetation is one of the chief foes of the rubber plantations, making constant weeding a necessity. On the other hand, the fertility of the soil and the hot, moist climate which produce the heavy vegetation, work wonders for the rubber trees.

The company has gone a long way to make the Americans and Europeans on its plantations comfortable. There is quite a little social life, centering in a club house. There are balls and entertainments, and occasionally there will be a visit from a traveling theatrical or concert troupe.

There are a number of large houses of comfortable proportions for company officials and their families, and many one-story bungalows. The houses have to be built with regard for the sun and rain. A large part of the home life is spent on the veranda, and this part of each house is usually large and commodious. Glass windows are unknown—each window is really a slatted shutter. Circulation of the air must be free at all times, as a room closed for a few minutes would become stifling.

Much of the pleasure in life in the East depends on the efficient management of the servants in one's employ. For this reason it is quite necessary to speak the Malay tongue. It is so easy to learn that anyone can get along well with it after a few weeks. But until it is acquired it is simpler to do some things yourself than to employ the sign language to order them done. When once the language is learned, life is worth living. A white man never carries a package or stoops to lift anything from the ground. When tennis is played there are always some boys about to pick up the balls.

The endeavor is to reproduce as nearly as possible the food

obtained at home. The native cooks get good results considering they don't have the American ingredients. But American women succeed admirably in adapting some of the tropical foods to the Yankee palate. The lack of raw vegetables is most felt. Because of the danger of diseases everything must be cooked.

It is necessary always to sleep in a bed protected by mosquito netting or in a room that is netted. The mosquitoes are countless and very troublesome. Of course, as in all tropical countries, the bugs of all sorts are numerous. One thing that always attracts the attention of newcomers is the little lizards that crawl on the walls and ceilings. They do no harm and one gets quickly used to them. The ladies take longer to get accustomed to them, however, than do the men.

(*United States Rubber Co.*)
THE KISARAN CLUB HOUSE.

When a woman accompanies her husband to the plantations she finds it more difficult to enjoy life than does her husband. He has his business to attend to and that keeps his mind occupied. But with the plentitude of servants the wife finds herself relieved entirely of housework and of the care of her children, if she desires, and she must be a person of resource if she is going to be happy. The woman who desires to create interest for herself can busy herself in her vegetable and flower gardens, in studying native life and in such sports as golf and tennis.

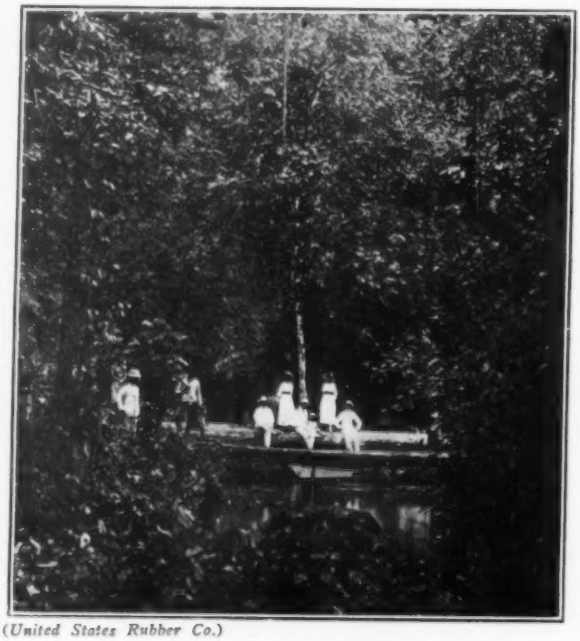
The servants are good and there are a lot of them. Each has his own work to do and does it, but he must not be asked to do anything out of his line. The cook is supposed to cook, and he feels badly treated if he is asked to do anything else. In a well-regulated home there are usually three to five servants.

(*United States Rubber Co.*)
BUNGALOWS "AMERICA" AND "HOLLANDIA" ON THE PLATEAU.

The country is an ideal one in which to raise small children They live in the open until they are six or seven years old and miss most of the children's diseases common in the United States. The native nurses are faithful and efficient and the little tots live an outdoor life untouched by trouble. When they are six or seven years old, however, most of them are taken away to the temperate zone to get acquainted with their home lands and for the educational facilities those lands afford.

Members of the white staff in Sumatra are in a fortunate position in one especial particular in that a few hours' motor ride into the interior will take them up on the plateau. This plateau, deeply cut by ravines and surrounded by mountains, has an elevation of 4,300 feet. Some of the mountains are volcanoes which are somewhat active occasionally, giving off fumes. At Bras Tagi the company has some bungalows where can be found recreation and rest from the humidity of the plains. Up there the vegetation is quite different. Some varieties of temperate zone vegetables and flowers grow, notably potatoes. The temperature goes as low as sixty at night and no higher than eighty-five in the day.

Altogether the life on the plantations is quite pleasant after becoming acclimated. But always, down deep in every American's mind is the thought of home, and his eyes are always turning back across the ocean toward home. Most of the Europeans are Hollanders—Sumatra is a Dutch colony—and they seem to feel that in Sumatra they are on Dutch soil and consequently are more content than Americans to remain indefinitely on the island.



(*United States Rubber Co.*)
SERBANGAN JUNGLE LAND.

BOLIVIA STARTED PUBLIC AUTOMOBILE LINES LAST MAY, ONE from Sucre, the capital, to Cochabamba, another from Sucre to Potosi. Haiti, too, has established a postal automobile service between Port au Prince and Miragoane.

AT ST. VINCENT THE SEA ISLAND COTTON CROP FOR 1918-19 amounted to 436,980 pounds or 1,214 bales, of which 682 bales were exported by the end of June. From Montserrat 222 bales of cotton were shipped, comprising 142 bales of clean cotton and 80 bales of stained.

AZTECA, S. A., 29 REVILLAGIGEDO, MEXICO, HAS APPOINTED Severino Carrera Peña manager of the company, succeeding Ignacio Orozco, resigned. The officers are: Antonio Letayf, president; Rafael Orozco, treasurer; and Ricardo Ramos Barrera, secretary. The concern manufactures tires and rubber goods.

Colors and Pigments in Rubber Compounds.

By Calvin Stitt.

The use of pigments and colors in the manufacture of rubber goods is of extreme importance and it may be said that the employment of these materials is of more consequence now than ever before. To anyone who has had the opportunity to note the various compounds that are being used at different rubber factories and to see the unlike purposes for which in many cases the same material is used, the results obtained are remarkable.

Sometimes a chemist will find that a special pigment will work out nicely while another chemist will condemn its use. In the main, it will be found that most rubbermakers use formulas that are similar in many respects. I do not think they approach any more nearness than this, surely they are far from being identical. The cause lies mainly in the employment of the so-called human element. It naturally follows that no two products of two different rubber factories are the same, as long as they are made by different chemists who employ their own compounds. In this case I mean the finished product naturally is not identical, such as two tires.

By means of certain pigments it is found that the rubber is toughened. Some other fillers add elasticity, etc. In the case of an automobile tire it is essential to have toughness and a certain elasticity as well. The reason why some tires wear out quicker than others is not always due to the fabrication or the cure. It is often caused by the compound not being of the proper proportion or containing pigments that harm rather than benefit the rubber. This condition will prevail as long as the rubbermaker neglects to standardize his ingredients and be sure that his raw materials are always as near alike as it is possible for him to mke them.

The selection of colors is of paramount importance. We will disregard the aniline group and look into the pigments or dry colors, because these are the most used, except in the manufacture of balloons, toys and some rubber sundries and mechanical goods.

The blacks are usually a carbon black, lamp black or mineral black. In passing it may be well to note, that the advance in price on carbon black aside from war conditions, has been due largely to the enormous consumption by the rubber factories during the past four years.

It has not been found practical to use a cheap quality of carbon black, especially for tire treads and rubber sundries, but rather the higher grades. The higher percentage of black is more inert and is claimed to have no detrimental effects on the stock where used. A very small amount of strong carbon black will give a beautiful black color. Where an intense black is not desired the carbon black can be cut down considerably. Some chemists and experienced rubbermakers claim that this material adds strength and better wearing qualities to the rubber, while others claim it does not have this effect, and still others even go so far as to say that it is detrimental in some cases.

Perhaps the real truth may be that in one compound it works out very well while in another which contains other component parts and proportions, the result may be somewhat different. Carbon black may therefore be blamed for conditions for which its use is not responsible.

Lamp black is not as strong as carbon black and gives a bluish tone to the rubber. Some factories have a separate black room, and collect the dust by blowers, etc. Many rubber boot manufacturers use lamp black and find it very satisfactory. The mineral black pigments are not as strong as these other blacks. Some grades of mineral rubber are used in black stock also.

The reds are mostly the iron oxides, Indian red, antimony, vermilion red, Pará red and toloudine red. The toloudine red and Pará red are vivid shades, and are made from intermediates, and really belong to the aniline group.

English vermilion is a mercury product and is also very vivid. It is employed extensively in dental rubber goods. It is not necessarily made in England as some suppose. The name merely implies the English process of manufacture. There are to-day in this country several large makers of it and their product is very satisfactory.

Antimony, both crimson and golden, is used extensively in tube stock, sometimes in connection with red oxide and sometimes alone. It is also used in the treads, boots, heels, etc. The best antimony comes from England, but due to the difficulties experienced in importing it, there has been a large consumption of the domestic grades.

Red oxides are usually sold on their percentage of iron oxide content. The greater percentage the higher the cost. Some are natural or earth colors, while some are manufactured, especially the higher grades. These higher grades are made from copperas or the by-product of wire mills. This country produces some excellent red oxide, but previous to the war most of the higher grades were imported from England.

Indian red is very closely allied to red oxide, and is used principally on account of its large covering capacity, and also on account of its beautiful color, it being more of a maroon, or purplish shade. The higher qualities of Indian reds are of extremely fine mesh, free from grit. It is interesting to note that on account of its softness and freedom from coarse particles, Indian red of the best quality will not scratch the surface of highly polished gold. For this reason, it is used extensively in jewelry factories, and there are many tons sold throughout the country for this purpose.

The yellow colors, such as zinc yellow, chrome yellow, etc., as well as the blue shades, like Malori, Chinese and Prussian blues, also the ultramarine blue, are used in a limited way. To one who understands the various shades and combinations that can be obtained by various mixtures of colors, the results are very interesting to follow out. Each color has an effect upon the fillers and pigments that are in the compound and is itself affected by the pressure and heat applied in the vulcanization, so that one has to know pretty certainly what he is doing in order to be sure of getting what he started out for. Even the most particular and experienced sometimes go wrong. There are so many things that creep in before the product is finally finished, that it makes it very hard sometimes to check out results in advance.

The white pigments and fillers are by far the most important and most largely used. Zinc oxide is the principal one. Some time ago, the writer suggested that certain grades of leaded zinc could be used in some compounds. Experiments were made along this line, and to-day there are several rubber manufacturers who are using leaded zinc. They all turn out a highly satisfactory article and, moreover, are saving money on their zinc. It is not necessary to use a zinc that is free from lead or even approximately lead free in all rubber goods. As previously stated, some rubber manufacturers use zincs that contain lead, and find that the finished product is satisfactory. This is especially true when the goods are not required to be white. Zinc oxides that are free from lead are best for white rubber, such as sheetings, some grades of automobile tires and druggists' sundries. The writer has found that some brands of zinc oxide cover better than others. The chemist has found that it is profitable to experiment along this line, in order to determine the most suitable zinc oxide to use in his compound.

Lithopone is used considerably in rubber, but its use is not as great as zinc oxide. Many chemists do not recommend its use at all, while others do. It is composed of about 29¼ per cent zinc sulphide and 69¼ per cent barium sulphate. This is the reason it is generally sold as 30 per cent. There is a vast difference in the physical properties of this pigment. It possesses very great covering power, and has a beautiful white color. It also has a peculiar tendency to darken in the light, but will, however, regain its original color. There has been no one who could satisfactorily understand this phenomena, although many have tried and as many different theories have resulted. At any rate, no one can control this change in lithopone or remedy it.

Whiting or calcium carbonate is quite an important white filler. It is inert and unaffected by vulcanization. Several grades are employed, both imported and domestic. The imported is the cliffstone or English chalk whiting, which is produced from the great chalk cliffs of England. The domestic products are of various qualities, and different colors, ranging from a brownish or yellow gray to a beautiful white.

Barium sulphate or barytes is generally of a white water-floated grade, although large amounts of off color barytes are consumed. The artificial barium sulphate or blanc fixe is not used in any appreciable quantities.

Soapstone and talc are used in certain compounds and in dusting tubes, tires and rubber goods generally. It is essential to get a product that is not gritty. Color does not make much difference.

It is extremely necessary that the quality of many of the pigments and colors that are put into compounds of rubber should be of a standard or recognized merit. Some sad experiences have taught many rubber mills this lesson, and it is becoming more apparent than ever, especially in view of the fact that so many new rubber manufacturers are starting up in all parts of the country. It is not always convenient or practical for rubber firms to test out every ingredient that they employ, and for that reason it is a good policy to direct their purchases in a direction where their needs are understood, and where the possibility of error is minimized.

A NEW RAPID METHOD FOR THE DETERMINATION OF SULPHUR IN RUBBER COMPOUNDS.

By A. M. Munro M.A., A.I.C., F.C.S.

THE ANALYTICAL METHODS for determining sulphur in manufactured rubber, in use at the present time, fall under two heads: (1) those in which the finely divided sample is fused with a suitable nitrate fusion mixture or with caustic potash and sodium peroxide; (2) those where the rubber is decomposed with fuming nitric acid and the sulphur completely oxidized by final treatment either by a fusion process or by partial evaporation of the residue with potassium chlorate and hydrochloric acid. In both these cases the sulphur is finally determined by precipitation with barium chloride.

In this laboratory it has been customary to determine sulphur by boiling the sample of rubber, cut into small pieces, with fuming nitric acid, evaporating nearly to dryness, adding about half a gram of potassium chlorate and a few cubic centimeters of strong hydrochloric acid, and again evaporating. If the sample showed incomplete decomposition the above process was repeated. The mixture was then diluted with boiling water, filtered, and the sulphate in the filtrate determined in the usual way as barium sulphate. This method gives very accurate results, is more speedy than the fusion methods, and is free from the danger of loss by spurting; a disadvantage almost inseparable from the latter methods.

In seeking a still faster method than the above for the rapid assay of sulphur, the writer devised the following, and strongly recommends it as a routine method of analysis where extreme speed combined with accuracy is required. Many carefully timed tests have been made and it has been demonstrated that, with practice, the whole analysis from weighing the rubber sample to that of the precipitated barium sulphate can be carried out within one hour.

DETAILS OF THE METHOD.

One to one and a half grams of the sample, cut into small pieces are placed in a large Erlenmeyer flask and covered with about ten cubic centimetres of strong nitric acid. This acid must be pure and free from traces of sulphuric acid. To this about five grams of sodium peroxide are cautiously added in small portions at a time. The reaction is often violent and the rubber commences to decompose, but no loss need be feared if the reaction is conducted in a large conical flask. The action is completed by gently warming the mixture on a sand bath.

After the first action is over and the rubber is more or less broken up, a process occupying a few minutes only, the mixture is boiled on the sand bath almost to dryness. Boiling water is added and the liquid filtered through a fast filter paper; the paper is washed twice with boiling water and the washings added to the filtrate. The sulphate in the filtrate is then precipitated in the usual way with a boiling solution of barium chloride, and, after standing for a few minutes, filtered through an ashless, fast filter paper, made to retain barytes. The precipitate is washed once by decantation and then on the paper until free from chloride. The paper and its contents are then removed from the filter, dried rapidly on a piece of wire gauze supported in the open over an asbestos mat heated by a Bunsen burner.

The precipitate is detached as completely as possible from the dry paper which is ignited separately. After the crucible has cooled the precipitate of barium sulphate is transferred to it and the crucible and its contents are again ignited at dull red heat. About five minutes' heating is sufficient to bring the precipitate to constant weight.

OBSERVATIONS.

The success and speed of the method outlined above depends on the fact that the combined action of the hot nitric acid and the hydrogen peroxide in the solution brings about a very rapid decomposition of the rubber and completely oxidizes the sulphur. It is probable, too, that nascent oxygen is present in the mixture and that this has a powerful action on the sulphur. Any loss of sulphur in the form of fumes of sulphuric acid during the final stages of the evaporation is prevented by the presence of sodium salts which convert all the acid into sodium sulphate. The use of a conical flask of large size precludes any loss due to spurting when the peroxide is added. In the precipitation, speed is attained by keeping all the solutions at boiling temperature and using fast filter papers, and considerable time is saved by drying the paper and precipitate as described on a wire gauze.

[1]Research chemist, Dunlop Rubber Company of Australasia, Limited.

VELOSAN ACCELERATOR.

The English vulcanization accelerator Velosan is now available on the American market and is certain to elicit much interest since adequate supplies of the popular hexamethylene tetramine are not at present available. Velosan has been familiar for the past four years to the rubber manufacturers of England. It is non-poisonous, free of objectionable odors, generates no extra heat and cures goods in one-half to one-fifth of the usual time required.

The quantity of Velosan to be used is one per cent of the crude rubber weight in the mixing. It is added to the batch from a sprinkling can or in a mixture with three or four times its bulk of dry ingredients. Care is necessary to insure its uniform distribution throughout the batch.

What the Rubber Chemists Are Doing.

THE DETERMINATION OF CELLULOSE IN RUBBER GOODS.[1]

A PROPOSED METHOD for the determination of cellulose in rubber goods has been worked out by S. W. Epstein and R. L. Moore, assistant chemists of the Bureau of Standards. The authors find that the method usually employed for the determination of the rubber content of mixing by difference will give worthless results whenever there are present ingredients which are driven off in the ashing or are not included in the other determinations. Unless these ingredients are determined separately the figure for rubber hydrocarbonation is necessarily erroneous. Free carbon[2], glue[3], and cellulose are examples of such ingredients.

Rubber sheeting, raincoat materials, balloon fabrics, spread goods and frictioned fabrics are cited as rubber products which have cellulose impregnated with rubber in such a way that it cannot be separated from it. In addition there is the type of mixing which has fiber distributed throughout the compound, such as fiber soles, special light compounds, and special packings. In order to evaluate these products properly the fiber must be determined separately.

DETAILS OF METHOD.

After having considered the essentials of a procedure for the determination of cellulose in rubber goods, the following method was devised:

Digest 0.5 gr. sample of rubber in a 250-cc. assay flask with 25 cc. of freshly distilled cresol (boiling point 198 degrees C.) for four hours at 160-185 degrees C. The digestion can be carried out on an electric hot-plate or better still in a constant temperature oven. Allow the cresol to cool completely and add 200 cc. of petroleum ether (boiling point 45-50 degrees C.) very slowly and with constant agitation. After the solution has settled completely and the supernatant liquid is perfectly clear, filter through a Gooch crucible containing a fairly thick pad of acid treated and ignited asbestos, and wash three times with petroleum ether. Wash at least five times with hot benzene and then once or twice with acetone. Treat the contents of the flask with hot 10 per cent solution of hydrochloric acid and transfer the entire contents of the flask to the Gooch crucible with the aid of a "policeman." Care must be taken in adding the first portion of acid to the Gooch since in the presence of carbonates the effervescence which ensues may cause some of the material to be lost. It is best to add the acid a few drops at a time until there is no more effervescence. Continue to treat with hot ten per cent solution of hydrochloric acid until the pad has been washed to least ten times. Wash the pad free from chlorides with boiling water and run small portions of acetone through it until the filtrate comes through colorless. Treat with a mixture of equal parts of acetone and carbon bisulhpide until the solvent is no longer colored. Wash with alcohol and dry for one hour and thirty minutes at 105 degrees C. Remove the pad from the crucible with the help of a pair of sharp pointed tweezers and place it in a weighing bottle that is large enough to contain a 25-cc. Gooch crucible or the size crucible that is being used. Use the underneath portions of the pad as a swab to clean the sides of the crucible. If necessary moisten this asbestos with a little alcohol since this will facilitate the complete removal of material which sometimes adheres tenaciously. Place the weighing bottle and contents in the drying oven for about 15 minutes, cool and weigh. Call this weight *A*.

Transfer the contents of the weighing bottle to a 50-cc. beaker, taking precautions that no material is lost during the transfer or allowed to remain in the weighing bottle. Add 15 cc. of acetic anhydride and 0.5-cc. of concentrated sulphuric acid and allow to digest for 30 minutes at 75 degrees C. The steam bath can be conveniently used for this purpose. After the mixture has cooled completely dilute with 25 cc. of 90 per cent acetic acid and filter through a weighed Gooch containing a thick pad of properly prepared asbestos. To guard against traces of material being carried through it is absolutely essential that this filtration as well as the ones to follow be very slow and that only gentle suction be used. Wash with hot 90 per cent acetic acid until the filtrate comes through absolutely colorless and then wash at least four times more. Wash about five times with acetone. After having taken care that all of the material has been washed out of the beaker in which the acetylation took place, remove the crucible from the funnel, clean the outside thoroughly, place it inside of the same weighing bottle that was used to weigh the pad and dry for two hours at 140 degrees C. Cool and weigh. Call this weight *B*. Weight of Gooch crucible plus weight *A*, minus weight *B* equals loss due to acetylation or cellulose.

It is essential that all reagents given above be of chemically pure quality and be filtered before using.

When large numbers of determinations were carried out according to the above procedure, it was found practical to distil the filtrates and in this way recover a large part of the solvents used. The combined filtrates containing petroleum ether, benzene and cresol were distilled on the steam bath to recover the petroleum ether. The benzene was recovered as the temperature was raised. Finally the water condenser was replaced by an air condenser and the cresol distilled out at about 195-200 degrees C. This distillate was usually only slightly yellow.

Likewise the filtrates from the acetylation, which contain acetic anhydride, acetic acid and small quantities of sulphuric acid were collected and distilled. The distillate was collected between 105 and 115 degrees C. and was used for washing to take the place of the 90 per cent acetic acid called for in the proposed method.

RESULTS.

Results obtained by the analysis of a number of prepared stocks containing cellulose in the form of cotton fiber clearly indicated that by this method it is very easy to determine widely varying amounts of cotton fiber very accurately even when accompanied by a miscellaneous collection of mineral fillers in the rubber compound. Even in the presence of 15 per cent of carbon black it was possible to get good results on cellulose because the weighings were all made in weighing bottles and therefore no error was introduced by absorption of moisture by the large amount of carbon.

The presence of large quantities of cellulose in some reclaims necessitates looking for cellulose in finished rubber goods of grades in which reclaims may be expected.

The presence of considerable amounts of leather does not affect the determination of cellulose. In the cases of wood and jute, a comparatively accurate estimation of their quantity can be obtained by using a modified procedure, in which the temperature of 120 degrees is used in place of 185 degrees C. in order to dissolve the rubber.

CONCLUSIONS.

I. The method presented is readily applicable to the determination of fabric in rubber sheeting, raincoat materials, waterproofed fabrics, spread goods, frictioned and calendered fabrics in general. The results obtained by this method have been found

[1] "Determination of Cellulose in Rubber Goods," by S. W. Epstein and R. L. Moore. Technologic Paper No. 154, Bureau of Standards, Washington, D. C.

[2] "Determination of Free Carbon in Rubber Goods," by A. H. Smith and S. W. Epstein, THE INDIA RUBBER WORLD, January 1, 1919, page 197.

[3] "Detection and Determination of Glue in Rubber Goods," by S. W. Epstein and W. E. Lange, THE INDIA RUBBER WORLD, January 1, 1920, page 216.

to be accurate by analysis of known compounds. The method has been shown to be useful in the detection and determination of cellulose in reclaims.

II. The presence of leather in mixings does not interfere with determination of cellulose.

III. In the analysis of light, cheap compounds such as rubber soles where wood, jute, cork and leather may be present, it is desirable to digest sample at 120 degrees C. in cresol for 16 hours, in order to keep these fibers intact. Acetylation obtains 95 per cent of the total wood; 90 per cent of the total jute; 21 per cent of the total cork, and 70 per cent of the leather.

IV. The amount of cork present in a mixing can be approximated by removing unacetylated cork residue and considering this as 70 per cent of the total.

V. In the absence of jute, wood and cork, it is shown that the amount of leather may be estimated approximately.

VI. The problem of separately determining wood, jute and leather in a mixing has not been solved.

DETERMINATION OF NITROGEN IN CRUDE RUBBER.

The exact nature of the nitrogen compounds in crude rubber has not yet been determined, but the assumption that they may be converted into ammonia has been demonstrated by Howie who has adopted Wilfarth's modification of anhydrous copper sulphate to the Kjeldahl method.

It is generally considered that the final stage in the digestion with sulphuric acid is reached when the solution becomes clear. Actually it is necessary not that the solution be clear but to completely change the nitrogen compounds present into ammonia. Because of the large proportion of hydrocarbons in caoutchouc, at least six hours are necessary to produce a clear solution.

To determine if this period can be shortened and still have a complete change of the nitrogen to ammonia, the following experiments were carried out. In each instance one gram of caoutchouc was digested with 30 cc. of sulphuric acid, seven grams of potassium sulphate, and about one gram of anhydrous copper sulphate. Identical samples were heated, respectively, for one, two, three, four, five and six hours, after which the percentages of nitrogen were determined in the ordinary way. The sample heated for six hours was the only one clear, but was colored. The others all contained more or less carbon in suspension.

The analytic results showed that it is unnecessary, at least for caoutchouc, that a clear solution be obtained and that from three to four hours is ample for obtaining the total nitrogen present. (*"Le Caoutchouc et la Gutta Percha."*)

THE CONSTITUTION OF VULCANIZED RUBBER.

W. C. Schmitz summarizes as follows his investigations and contribution to the knowledge of the constitution of rubber by means of bromination, which appears in *"Gummi-Zeitung,"* volume 34, No. 10, page 193.

The impression that the bromine method would enlarge our insight into the problem of vulcanization has been confirmed to some extent and further results may be anticipated.

The author's investigation has shown that the bromine absorption is purely additive, there being no substitution. The reaction proceeds in two stages when continued for 18 to 20 hours, ten atmospheres of bromine being absorbed by the caoutchouc molecule in the first stage, two molecules of hydrogen bromide being afterwards liberated. The residue tetrabromide differs from the known caoutchouc tetrabromide by being insoluble in carbon tetrachloride. Full details of the method are given and the same reagent is being applied in the study of vulcanized rubber. The questions so far clearly defined in the latter connection are as follows:

1. Is vulcanization a purely additive combination of rubber with a sulphur combination?
2. Is the sulphur combination the result of substitution?
3. Is the purely colloidal explanation of the sulphur combination adequate, or are stoichiometric laws and colloidal factors involved?
4. Are the improved physical qualities of vulcanized rubber the result of pure chemical process?

SYNTHETIC RUBBER FROM PETROLEUM.

Synthetic rubber from petroleum, and the process for making it, as described in a treatise by Professor Ossian Aschan, of the University of Helsingfors, are discussed by Giuseppe Bruni, of the Pirelli laboratory at Milan, in a recent issue of the *"Giornale di Chimica Industriale."*

The Italian chemist concedes that the method may be employed with success for commercial quantities as well as in the laboratory. Though not wholly certain of this, he demonstrates that even with a material as common as Russian petroleum to draw upon, the cost of production would be prohibitive. It seems hopeless that synthetic rubber from any source can compete with natural rubber while the latter can be produced at a profit at the prices now prevailing.

ACTION OF PHENOL IN RECLAIMING.

André Dubosc, in *"Le Caoutchouc et la Gutta Percha,"* July 15, 1919, states that a better quality of reclaimed rubber is obtained by phenol than by the alkali process. The action is explained in two ways: (1) depolymerization of the rubber molecule; (2) formation of phonolic ethers or sulphides such as phenyl sulphide or thiophenol, the heat of the formation of which is greater than that of vulcanized rubber. Either water or alkaline solutions of phenol are used.

CHEMICAL PATENTS.

THE UNITED STATES.

Flexible Heat-resisting Composition. An inflatable expansible core tube for use in the curing of sulphurized rubber tires is formed of rubber mixed with telurium or selenium which gives the material great durability when subjected to repeated heating. (H. E. Smith, United States patent No. 1,322,734.)

Heat Resisting Packing consisting of vulcanized rubber compound having magnesite in a state of fine subdivision incorporated and distributed therein. (Julius Stromeyer, Philadelphia, Pennsylvania United States patent No. 1,330,148.)

Packing. A molded and vulcanized piston packing ring comprising in its composition rubber, sulphur and ground sponge. (George Christensen, Jamaica, assignor to H. W. Johns-Manville Co., New York City, both in New York. United States patent No. 1,330,979.)

Dope or Substitute for Celluloid, Vulcanite, etc. A plastic composition comprising a phenol-formaldehyde condensation product, camphene and a cellulose derivative. (William Thomas Robinson-Bindley, Wimbledon, and Arthur William Weller, both of London, England. United States patent No. 1,331,127.)

Composition for Use as Substitute for Leather. A dense non-elastic composition of matter comprising rubber, finely ground sponge and a considerable proportion of inert filler intimately mixed together. (George Christensen, Jamaica, N. Y., assignor to H. W. Johns-Manville Co., New York. United States patent No. 1,332,320.)

Process for Treating Latex and Product Obtained by coagulating rubber producing and similar latex, restraining the expansion of the latex during coagulation in the absence of applied fluid pressure, whereby the latex will be subjected to a gradually increasing pressure during its coagulation, and adding a vulcanizing agent thereto. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., New York City. United States patent No. 1,332,925.)

Rubber Composition and Process for the Production thereof, comprising an admixture of a vulcanizable plastic and rubber seed pulp. (Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Co., New York City. United States patent No. 1,332,926.)

THE DOMINION OF CANADA.

Rubber Treating Process. Consisting in reducing waste vulcanized rubber to a finely divided state; adding a small quantity of new unvulcanized rubber in sufficiently dilute solution to produce a very thin film over the vulcanized ground waste; driving off the solvent and forming and vulcanizing the mixture in the usual manner. (The City Trust Co., assignee of Joseph Porzel, both of Buffalo, N. Y., U. S. A. Canadian patent No. 196,948.)

Waterproofing Composition Consisting of paraffine wax, dissolved rubber, a resinous substance dissolved in alcohol, a light hydrocarbon oil and carbon bisulphide. (The Gary Waterproofing Corp., Chicago, Illinois, assignee of Guy Madison Garlick, Kalamazoo, Michigan, U. S. A. Canadian patent No. 197,340.)

Waterproofing Process, which comprises heating a mixture of melted wax, resinous substance and dissolved rubber to 305 degrees F., and at varying specified suitable intermediate temperatures adding a resinous substance dissolved in alcohol, light hydrocarbon oil, and carbon bisulphide. (The Gary Waterproofing Corp., Chicago, Illinois, assignee of Guy Madison Garlick, Kalamazoo, Michigan, both in U. S. A. Canadian patent No. 197,341.)

THE UNITED KINGDOM.

Leather Compositions for making boot soles, coating canvas for printers' blankets, upholstery, etc. The following proportions by weight may be used: 16 rubber, 20 leather flour, 5 calcined magnesia, 3 sulphur, 3 brown factice, or for a hard vulcanite material, 32 rubber, 60 leather flour, 16 sulphur and ½ magnesia. After mixing, the temperature of the rolls is raised to effect partial vulcanization and the material is finally passed to calender rolls prior to complete vulcanization in a platen press or an open live-steam press. (W. Drury, 10 Lena Gardens, Shepherds Bush, London. British patent No. 135,921.)

Vulcanizing Rubber. Nitrosobenzene or a similarly constituted nitroso-hydrocarbon of the cyclic series is used as an accelerator in the vulcanization of rubber. As an example, 100 parts of rubber are mixed with ten parts of sulphur and 0.5 parts of accelerator. (S. J. Peachey, 5 Yew Tree Road, Davenport, Stockport, England. British patent No. 136,716.)

Rubber Paving Slabs or Tiles are formed with a wearing surface of soft rubber composition and a foundation of hard rubber composition. The tiles may comprise a plurality of layers varying in hardness from top to bottom, and the bottom layers may be formed wholly or mainly from ground waste rubber. As an example the bottom layer may be formed from a mixture of five parts of ground rubber waste with two parts of sulphur, and the top layer of ground rubber alone. (Grimston Tyres, Limited, The Camp, St. Albans, Hertfordshire, and J. F. Cooper, Ivy Cottage, Port Vale, Hertford, both in England. British patent No. 137,117.)

THE FRENCH REPUBLIC.

Substitute for Rubber. (V. A. Rosa. (French patent 498,071.)

Process for Reclaiming Benzine or Other Solvents employed in the rubber industry. (Société Anonyme des Anciens Etablissements. J. B. Torrilhon. French patent No. 498,464.)

GERMANY.

Process for Regenerating Rubber Scrap. The material is heated with water under a pressure of 200—600 atmospheres at 210 degrees C., and in presence of alkaline substances such as caustic soda. Free and also combined sulphur as well as organic and inorganic filling materials are more completely removed than by existing processes, and the rubber is not affected. (W. North and H. Loosli, Hanover. German patent No. 313,554.)

Production of Highly Elastic Vulcanizates from Synthetic Rubber. Middle tar oil is incorporated with synthetic rubber prior to vulcanization, and imparts a high degree of elasticity to the final product. From three to five times the proportion of the customary "elasticators" is easily incorporated, the saturation limit being 150—200 per cent. (Mittledeutsche Gummiwarenfabrik. L. Peter, Frankfort. German patent No. 315,321.)

Process to Coagulate Rubber Latex. (Francis Alban Byrne, Birmingham, England. German patent No. 320,170.)

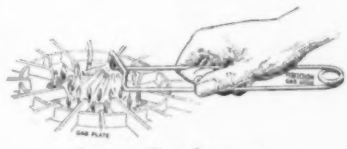
AUSTRALIA.

Caoutchouc. (E. Phillips, assignor to The Goodyear Tire & Rubber Co. Australian patent No. 8621.)

LABORATORY APPARATUS.

METALLIC SPARK SAFETY GAS LIGHTER.

The metallic spark gas lighter of the form common in domestis use is a decided convenience much appreciated in the laboratory where it will quickly light all kinds of gas, gasoline, acetylene and alcohol stoves, blowtorches, mantle burners, gas jets and solid alcohol.

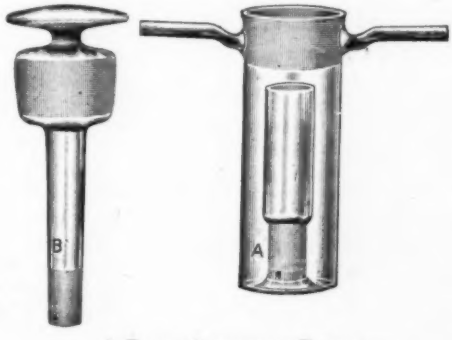


Safety Gas Lighter.

(National Liter Co., 702 East 63rd street, Chicago, Illinois.)

THE FISHER ABSORPTION BOTTLE.

A new form of absorption bottle described as "a V-tube passed through the fourth dimension," is here illustrated. This apparatus has the same absorption qualities as the U-tube. The principle of design is the same, but the arms, instead of being alongside of each other, are placed one inside of the other. This bottle is very desirable in any combustion work where dry reagents are used and has proved of particular value in rapid organic work. One turn shuts off inlet and outlet and also chamber A from B. It is easily charged and cleaned; is small, compact, light in weight, and stands solidly on the balance pan. (Eimer & Amend, 211 Third avenue, New York City.)



A Rapid Absorption Bottle.

The Bureau of Standards is engaged in the extensive project of developing standard specifications for all classes and types of rubber goods. Specifications for pneumatic tires and cotton jacket fire hose have already been submitted to the trade for suggestions. Work on surgical goods, tubing, rubber stoppers, etc., is under way.

New Machines and Appliances.

RUBBER BAND CUTTING MACHINE.

Just how many pounds of stationer's rubber bands are manufactured yearly in the United States is a matter for conjecture; however, the figures must certainly be in millions of pounds. A primary factor in the quantity production of this ubiquitous article is the band cutter shown in the accompanying illustration. It will cut bands in standard widths from 1/32-inch to 3 inches and in length up to 13 inches.

The Cruickshank Band Cutter.

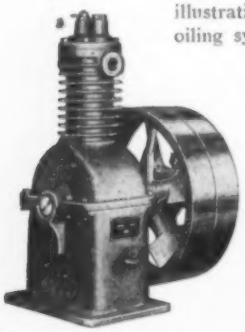
The operation is as follows: The circular strips or tubes are fed in the machine and over the apron, and are flattened out by a roller located just in front of the three revolving knives which come successively in contact with a stationary knife.

If short bands are required, as many as five or six strips may be run through at once, producing from 1,800 to 2,800 bands per minute. A set of change gears is provided for cutting bands of the various widths. The machine runs from 120 to 160 r. p. m. (Makers, The Cruickshank Engine Co., Providence Rhode Island. Selling agents, Birmingham Iron Foundry, Derby, Connecticut.)

THE CURTIS AIR COMPRESSOR.

It is an indisputable fact that oil is detrimental to pneumatic tires and tubes, but when necessary they are inflated wherever most convenient and without a thought of possible injury due to impure air.

The compressor shown in the accompanying illustration is provided with a special splash-oiling system that prevents oil from entering the cylinder, thereby avoiding the presence of oil in the air supplied to the tires.



Oil-Proof Tire Inflater.

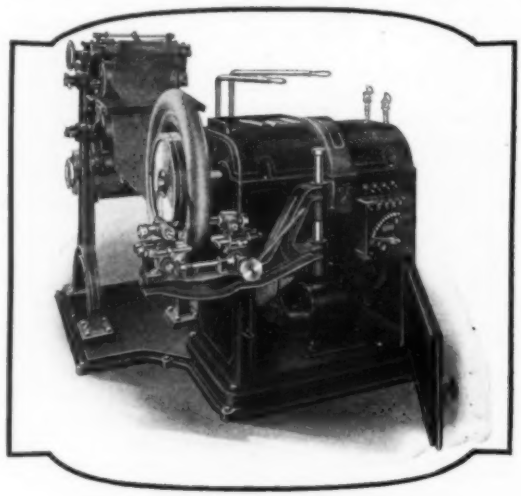
Other features are: high and low level oil-filling gages that indicate the amount of oil in the crank case; flywheel in fan for cooling the cylinder; inspectable valves; hand unloader facilitating starting compressor under tank pressure, and a head that is easily removed. (Curtis Pneumatic Machinery Co., 30 Church street, New York City.)

HERMAN TIRE-BUILDING MACHINES.

One of the salient features of these tire building machines is in the method employed in mechanically centering the fabric on the core while the carcass is being constructed.

By means of a novel centering device, all fabric leading from the rolls is not only automatically centered, but marked and guided into position without aid or assistance from the operator. This, together with improved tension rolls, gives perfect control and diminishes edge trim to a minimum.

This machine is manufactured in two models, the Special being designed and constructed for making Ford sizes only, while the two-unit or Universal will build any size and style up to and including five-inch. Due to the convenient arrangement of the tension rolls, two widths of fabric are always in position to the core on either machine, thus it will be seen that no movement is necessary on the Special, while on the Universal two automatic movements, in which no time is lost to the operator or builder, supply the necessary widths of fabric with which to construct the larger sized tires. (The Herman Tire Building Machine Co., Columbus, Ohio.)



Herman Special Tire Builder.

ELAPSED TIME RECORDER.

This device is a time meter or elapsed time recorder and by its use the necessity of subtracting the starting from the finishing time of jobs is entirely eliminated. One machine will compute and print elapsed time for any number of workmen who are engaged upon any number of jobs, irrespective of the order of starting and ending of the operations. It will also print the time of day a job is started and finished. These records may be made on cards or tickets of various sizes and shapes, which can be furnished by any printer.

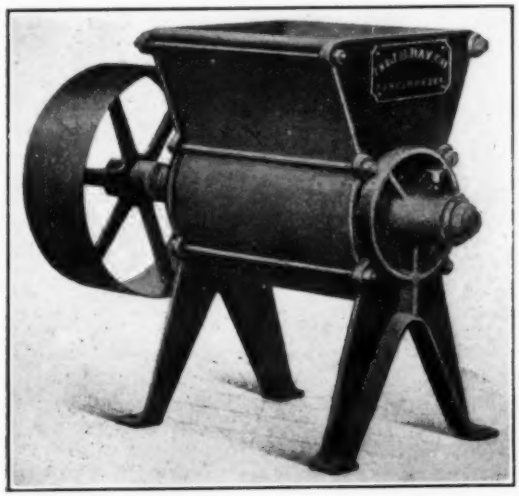
The Calculagraph.

One type of the machine prints elapsed time in hours and minutes, another type in hours and tenths of an hour and there are also different models for computing elapsed time for maximum periods of twelve, twenty-four, and sixty hours. (Calculagraph Co., 30 Church street, New York.)

MINERAL RUBBER CRACKER.

Mineral rubber has a wide range of usefulness in rubber manufacture and occupies an important place as a standard ingredient in rubber compounding. As this material is supplied by the makers in rather inconvenient form, the rubber manufactures find it necessary to "crack" it. This is effectively accomplished by passing the brittle mineral rubber through a crusher that reduces it to a size suitable for milling.

The machine shown in the accompanying illustration performs the operation of cracking in a satisfactory manner. It is provided with an ample hopper and with a discharge extending the full length of the bottom. The belt-driven crusher shaft is provided with heavy breaking lugs that pass between stationary lugs on each side of the cylinder. The machine is 33 inches high, 42 inches long and weighs 450 pounds. (The J. H. Day Co., Cincinnati, Ohio.)



Day Hercules Crusher.

INDICATING CALIPERS.

This useful hand-tool that is a modified outside caliper, comprises a rule, a magnifier and an indicator. It is supplied in two sizes, the 2-inch being graduated in 1/100 inches. Every tenth graduation is marked 10, 20, etc., to 100 and repeated to 200. The fifth intervening graduation is made longer to facilitate quick reading. The scale is three times actual measurement.

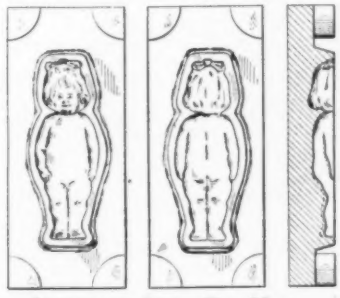
The 3-Inch Indicating Caliper.

The 3-inch indicating caliper is graduated in 1/64 inches. Every eighth graduation is marked 1, 2, 3, etc., to 8 and repeated to three inches. The fourth intervening line is made longer for easy reading. The distance between points on the dial is twice actual measurement. (Indicating Calipers Co., 506 East 19th street, New York City.)

MACHINERY PATENTS.

MOLD FOR MAKING RUBBER ARTICLES.

Molds made of cast iron with the mold surface machined according to the contour of the article are very expensive. So also, molds of white metal cast on a metal matrix involve large expense in making the matrix.

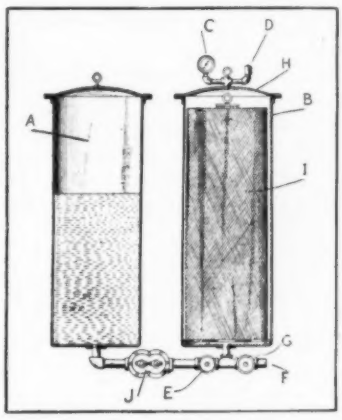


Aluminum Alloy Toy Mold.

A very satisfactory sand-cast mold for the manufacture of rubber articles may be made by employing an aluminum alloy which is free from ingredients which will unite with the sulphur compound in the rubber article. The alloy consists of approximately 97 per cent of aluminum and three per cent of magnesium and may be sand-cast with a smooth surface to be effectively used without machining. (Fred Thomas Roberts, Cleveland, Ohio, United States patent No. 1,329,312.)

PROCESS OF TREATING TIRE FABRIC.

The object of this invention is the introduction of a lubricant into pneumatic tire fabric, in the form of a suspension or emulsion in the yarn, threads or cords from which the fabric is woven, or into the woven fabric itself.



Tire Fabric Impregnator.

The form of apparatus used is shown in the illustration. It consists of twin cylinders, A containing the liquid lubricant and B, the impregnating cylinder, containing the fabric to be treated, wound on a series of parallel rods to admit the free contact of the emulsion or suspension with the inside of the roll. Mounted on the head is a gage C, to indicate the pressure on the inside of the cylinder, and an air-valve D, for the escape of the confined air.

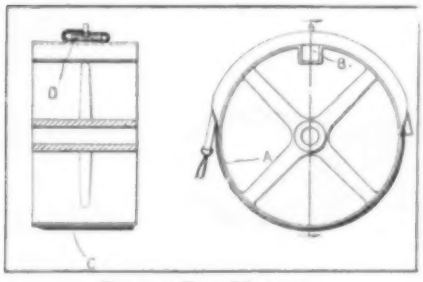
The cylindrical tanks are united by a pipe connection. A valve E, controls the flow of the lubricating solution. A steam pipe F, controlled by a valve G, connects the cylinder B, with a supply of steam.

In operation the valves E and G are closed, the detachable head H removed and the roll of fabric I placed in the cylinder. The head being secured in place, low-pressure steam is admitted to the cylinder through valve G. This heats the fabric, and drives out the air through valve D. Valve G is then closed and valve E is opened. Cold emulsion or suspension from tank A enters cylinder B and comes in contact with the hot water vapor. Condensation follows, automatically producing a vacuum which allows the emulsion or suspension to permeate the interstices of the fabric.

After this takes place atmospheric pressure is admitted to cylinder B and the surplus fluid pumped back into the tank A through the pump J. The fabric is then removed and thoroughly dried, leaving the lubricant in intimate contact with the fibers. (William C. Carter, Radnor, Ohio, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio. United States patent No. 1,327,904.)

METHOD AND APPARATUS FOR MAKING BICYCLE TIRES.

The object of the improvement of the means and method for forming pneumatic tires, particularly single tube bicycle tires, is the elimination of sharp bends in the fabric at the point where it passes over the valve cot and the perfection of the adhesion between the head of the valve cot and the material forming the tire. The tire is built upon the drum A which has a diameter substantially equal to the inner diameter of the tire to be produced, and having an axial slot B adapted to give clearance for the valve cot. The tire forming materials of rubberized fabric and uncured rubber C are laid circumferentially on the drum and folded into tubular form over a spacing strap D provided with a handle for convenience.



BICYCLE TIRE MACHINE.

As the layers are folded, the material is tightly sealed with a hand tool and the strap drawn along. The last few inches of the circumference of the tire is folded without the spacing strap and pressed without backing.

A spheroidal depression is provided in the strap, into which the head of the valve cot and the fabric covering it may sink. This permits any desired amount of pressure being exerted by the hand tool around the valve cot without danger of bending the fabric layers at this point and ensures more perfect adhesion between valve cot and fabric. (Joseph A. Bowerman, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Massachusetts. United States patent No. 1,327,802.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

NO. 1,329,849. Tire-trimming table. L. B. Pierson, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,330,383. Machine for trimming rubber hose. F. C. Moore, Canton, O.

1,330,595. Apparatus and method for removing toy balloons from forms, etc. W. G. Lerch, assignor to The Miller Rubber Co.—both of Akron, O.

1,330,785. Mandrel for tire tubes. D. A. Clark and C. E. Lowe, assignors to The Republic Tool and Manufacturing Co.—all of Cleveland, O.

1,330,886. Apparatus for applying hard rubber to tire foundation bands. C. Macbeth and E. Sullivan, Birmingham, assignors to The Dunlop Rubber Co., Limited, Westminster, London—both in England.

1,330,958. Tire-retreading form and method of construction. W. J. Shriver, Milwaukee, Wis., and C. K. Heasley, Chicago, Ill.

1,330,976. Apparatus for forming composite bodies of rubber and fibrous material. H. L. Boyer, assignor to Joseph Stokes Rubber Co.—both of Trenton, N. J.

1,331,146. Tire mold. E. W. Fothergill, assignor to Hartford Rubber Works Co.—both of Hartford, Conn.

1,331,242. Tire-building machine. J. J. Convery, New York City, assignor to Kelly-Springfield Tire Co., Akron, O.

1,331,657. Machine for making pneumatic-tire covers, etc. C. Macbeth and C. K. Jones, Birmingham, assignors to The Dunlop Rubber Co., Limited, Westminster, London—both in England.

1,331,982. Vulcanizer. P. Deutscher, Indianapolis, Ind.

1,332,109. Tire-making machine. J. J. Convery, New York City, assignor to Kelly-Springfield Tire Co., Akron, O.

1,332,329. Stock shell for winding tire fabrics. W. F. Gammeter, Cadiz, O.

1,332,330. Tire machine drum. W. F. Gammeter, Cadiz, O.

1,332,608. Tire-building machine. J. J. Convery, New York City, assignor to Kelly-Springfield Tire Co., Akron, O. (Application divided.)

1,332,779. Apparatus and method for forming inner tubes for pneumatic tires. W. C. Tyler, Racine, Wis., assignor to The Goodyear Tire & Rubber Co., Akron, O.

1,332,812. Apparatus and method for removing tires from cores. R. B. Day, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,332,963. Press for molding plastic articles. A. Y. Tucker, Mount Vernon, N. Y., and J. E. Congdon, Passaic, N. J., assignors to the New York Belting & Packing Co., New York City. (Continuation of application Serial No. 152,170, filed March 3, 1917.)

1,332,990. Tire-bead-cutting apparatus. G. McNeill, assignor to Morgan & Wright—both of Detroit, Mich.

1,333,047. Die for making pneumatic-tire treads. E. D. Valentine, Springfield, O.

1,333,062. Vulcanizer for rebuilding tires. W. B. Coats, Faribault, Minn.

1,333,150. Tire-building buck. H. F. Bartlett, Muskegon, Mich.

THE DOMINION OF CANADA.

197,358. Machine for manufacturing tire treads. G. A. Hagstrom, Kansas City, and I. S. Snyder, Rosedale, assignee of ½ interest—both in Kansas, U. S. A.

197,390. Tire vulcanizing apparatus. E. Hopkinson, New York City, U. S. A.

197,391. Apparatus for manufacturing pneumatic tires. E. Hopkinson, New York City, U. S. A.

197,493. Apparatus for manufacturing tires. E. Hopkinson, New York City, U. S. A.

THE UNITED KINGDOM.

136,236. Device for forming circumferential ribs on rods, cords, tubes, etc., of rubber as they are formed on an extruding machine. A. Abernathy, 19 Greyhound Lane, Streatham, London.

136,301. Apparatus for molding tires. A. A. Thornton, 8 Quality Court, Chancery Lane, London. (J. L. G. Dykes, 52 East 11th street, Chicago, Ill., U. S. A.)

136,888. Tire mold. A. A. Thornton, 8 Quality Court, Chancery Lane, London. (J. L. G. Dykes, 52 East 11th street, Chicago, Ill., U. S. A.)

136,889. Machine for making tire covers. A. A. Thornton, 8 Quality Court, Chancery Lane, London. (J. L. G. Dykes, 52 East 11th street, Chicago, Ill., U. S. A.)

136,890. Machine for stretching, shaping, and vulcanizing tire bands. A. A. Thornton, 8 Quality Court, Chancery Lane, London. (J. L. G. Dykes, 52 East 11th street, Chicago, Ill., U. S. A.)

THE FRENCH REPUBLIC.

496,611. Autoclave vulcanizer and dry oven combined. O. A. J. B. Greuet, 4 rue Meugnier, Maisons-Laffitte.

497,068. Machine to exhaust the air chambers of pneumatic tires. A. Schrader's Son, Inc.

497,641. Improvements in machines for calendering bases or bands of vulcanite for solid rubber tires. The Dunlop Rubber Co., Limited.

497,693. Apparatus for extracting oil from rubber and other substances contained in compounds soluable in organic solvents. Fisher Chemical Engineering Co., Limited.

498,012. (July 10, 1918.) Apparatus for a machine with extensible core that can be regulated, for baking pneumatic tires. Société Arnaud Soly et Cie.

498,594. Improvements in machinery for constructing the coverings of pneumatic tires. The Dunlop Rubber Co., Limited.

499,193. Machine for constructing tires. The Goodyear Tire & Rubber Co.

AUSTRALIA.

8,951. Vulcanizer. W. Reilly.

GERMANY.

320,335. Apparatus to evaporate wood acids and similar fumigatories in handling rubber latex or coagulated crude rubber. F. A. Byrne, Birmingham, England.

320,336. Mixing mill for rubber and similar substances. Société A. Oliver et Cie., Clermont-Ferrand, France.

320,337. Machine to mold pneumatic tire covers. F. H. Mercer, H. F. H. Blease and the Avon India Rubber Co., Limited, Melksham, England.

320,338. Machine to mold the covers of pneumatic tires. F. H. Mercer, H. F. H. Blease, and the Avon India Rubber Co., Limited, Melksham, England.

PROCESS PATENTS.

THE UNITED STATES.

NO. 1,329,524. Molding openings for cork inserts in rubber heels. R. I. Hill, assignor to The Hill Rubber Co.—both of Elyria, O.

1,329,630. Insulating wire. J. J. Reinhold, Marietta, Pa.

1,330,791. Producing rubber grips for metal tool handles. C. T. Dickey, Elizabeth, assignor to J. J. Voorhees, Jr., Jersey City—both in New Jersey.

1,330,855. Repairing pneumatic-tire covers. F. W. Farr, Northampton, Eng.

1,332,169. Manufacture of rubber-type stamps. J. Ellis, assignor to Featheredge Rubber Co.—both of Chicago, Ill.

1,332,847. Shaping vulcanized rubber heels. W. J. Kent, Brooklyn, N. Y., assignor to Revere Rubber Co., Providence, R. I.

THE DOMINION OF CANADA.

197,521. Production of rubber soles by cutting blanks before vulcanizing. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of M. H. Clark, New York City, U. S. A.

197,552. Manufacture of sponge rubber inner tires encased in fabric. The Pan-American Rubber Co., Milwaukee, assignee of A. F. Mayer, Watertown—both in Wisconsin, U. S. A. (See THE INDIA RUBBER WORLD, March 1, 1920, page 366, for description of inner tire.)

THE UNITED KINGDOM.

136,881. Securing rotary rubber and other heels. W. Plowright, 18 Palmerston avenue, Whalley Range, Manchester.

THE FRENCH REPUBLIC.

498,085. Process for making hollow articles of rubber. The Aranar Co.

498,509. Improvements in constructing air chambers in pneumatic tires. The Dunlop Rubber Co., Limited.

AUSTRALIA.

8,346. Mounting tire covers. G. Vincent.

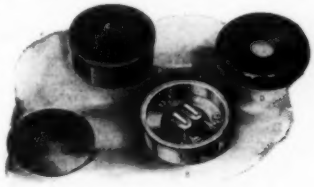
New Goods and Specialties.

WATCH-CASE TELEPHONE RECEIVER.

WATCH-CASE TELEPHONE RECEIVERS encased in shells of hard rubber or of a composition to substitute hard rubber are a convenient development of telephonic accessories. The one shown here in the first illustration on the page is adapted to hang on the receiver-hook of any telephone. It is also used in the head-piece of the "National" radio receiver, in that case being pivoted for easy adjustment, without the hook for hanging.

CONVENIENT TELEPHONE RECEIVER.

The working parts of the receiver are mounted in a metal cup independent of the shell, thus assuring greater mechanical strength and permanent adjustment. The second illustration shows the construction, detail *B* giving the assembly of the permanent magnets, coils, and terminal block in the cup. The diaphragm *A* rests on the rim of the cup *B* which is set inside the shell *C* and securely locked by the ear-piece *D*. Temperature thus cannot affect the adjustment. The magnets are laminated, semi-circular in form, and adapted for retaining their strength permanently. (The Holtzer-Cabot Electric Co., 115 Amory street, Roxbury, Mass.)



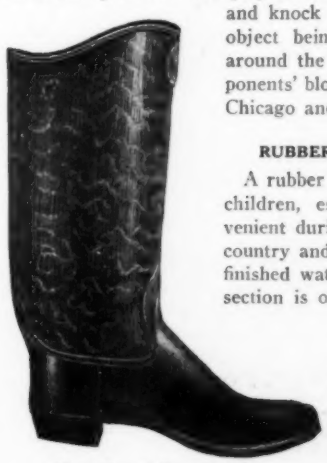
RECEIVER PARTS—DETAIL.

BIFF, A NEW GAME.

The devising of a new game means more business for the sporting goods dealer who carries the ball or other articles used in playing it. "Biff" is a form of tether ball. An ordinary punching bag is tethered at the top of a four-foot standard which can be anchored on an ordinary table. The players stand at each end of the table and knock the ball back and forth, the object being to wrap the tether rope around the standard in spite of the opponents' blows. (Thos. E. Wilson & Co., Chicago and New York City.)

RUBBER BOOT WITH SILK TOP.

A rubber boot for wear by misses and children, especially practical and convenient during the spring thaws in both country and city, is made with a glossy finished watered silk top, while the foot section is of plain black varnished rubber. The entire boot is lined with black fleece lining to assure the wearer against coldness. The rubber part extends well up on the top at the back and front. The sole is of the knurled type to give secure footing, and there is a comfortable low heel. The sizes run as small as No. 4 for children. (The Kaufman Rubber Co., Limited, Kitchener, Ontario, Canada.)



"LIFE-BUOY" RUBBER BOOT.

TIRE PATCH APPLIED WITH FUSE.

A device for applying patches to tires and tubes, rubber boots and shoes, hot-water bottles, hose, life preservers, or other articles made of rubber is called the "Tong-em-on" vulcanizer, and with this are provided a set of patches, two coppered pans (puncture and blow-out sizes), fuses, and a buffer. The method of application is to roughen thoroughly the surface of the article to be repaired, stick a patch to the bottom of copper pan, remove cloth, and clamp over hole. By sliding back the floating rivet in the slot the tong is kept closed. Two fuses are then put into the pan and lighted with a match. These furnish sufficient heat to cure the patch into place permanently. The article can then be used immediately. The "Tong-em-on" vulcanizer is nickel-plated. (Tong-em-on Vulcanizer Co., 626 Plymouth Building, Minneapolis, Minnesota.)

"TONG-EM-ON" VULCANIZER.

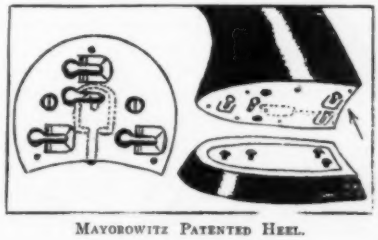
"KEWPIE" BABY PANTS.

The use of rubber in the manufacture of articles intended for sanitary purposes has resulted in many practical adaptations which utilize both hard and soft rubber, rubber tubing, sheet rubber, etc. One of the later developments of sheet rubber is in the manufacture of baby pants. These are intended to slip on over the diaper and fit snugly enough to protect the clothing, yet are comfortable for the baby to wear. The style shown here is called the "Kewpie," and is patented. Shirring at the waist and leg openings is cemented to strips of rubber which permits the openings to stretch sufficiently for easy adjustment. The manufacturer also makes a full line of other rubber sanitary baby pants, aprons, sheetings, etc. (The Climax Specialty Co., 915 Pine street, St. Louis, Missouri; owner of trade mark, Maude Sinclair George.)

"KEWPIE" BABY PANTS.

INTERCHANGEABLE, DETACHABLE HEEL LIFTS.

A new development of the interchangeable, detachable rubber heel lift for both men's and women's shoes is shown in the accompanying illustration. The heel base remains at all times attached to the shoe and to this base is attached a metal plate in which are curved slots extending upward. The heel lift of rubber has an equal number of pegs extending beyond its inside surface to engage the slots in the heel base. After the heel lift is put into place and struck a sharp blow to drive it into alinement it is locked by a sliding key. The metal parts are of non-corrosive metal. This idea has also been adapted for women's French heels. (Maurice Mayorowitz, 720 East 9th street, New York City.)



MAYOROWITZ PATENTED HEEL.

TIRE VALVE AND GAGE IN ONE.

A tire valve that combines with its primary function that of gaging the pressure of air in the tire is a convenience that most car owners will appreciate, as it does away with the bother of applying a separate gage to determine the amount of air pressure

Pulverman Tirometer Valve.

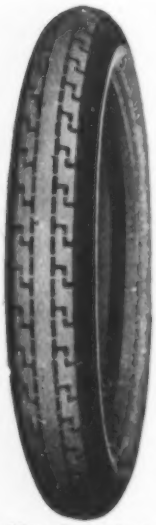
at any given moment. This device, called the Pulverman Tirometer valve, has a transparent dust cap, within which is positioned the gage so that it can be easily read without removing the cap. This valve can be substituted for the ordinary valve on any tire, as it fits any pneumatic tube. (Tirometer Valve Corporation of America, Charleston, West Virginia.)

"AIR-PEDS" FOR HEELS AND SOLES.

A new development of the rubber heel and sole is shown here in a set of three pieces of corrugated rubber, one to be attached to the heel and two to the sole of any shoe. The corrugations are so arranged that they minimize the liability to slip, according to the claim of the manufacturer, because in each piece the corrugations run in different directions. Because "Air-Peds" are in three pieces, they are not liable to draw the feet. They are attached in the same way as rubber heels but cannot crack or rip. These attachments are suitable for use by laborers, business men, sportsmen, golfers, etc. They may be had in either black or tan rubber. (Pioneer Products Co., 35 West 39th street, New York City.)

"Air-Peds."

A LATE CORD TIRE.



"Syra-Cord" Tire.

One of the newcomers in the cord tire world is pictured here. It is made by a comparatively new company that specializes in cord tires only and is produced by special machinery and processes. The "Syra-Cord" tire is notable for its Universal tread which is supposed to give a positive action against skidding as well as to possess the easy riding and steering qualities of the ribbed tread. (Syracuse Rubber Co., Inc., Syracuse, New York.)

"PORCUPINE" BLOW-OUT PATCH.

The "Porcupine" blow-out patch is so called because its outer surface is bristling with metallic quills which embed themselves in the inner side of the damaged tire, the points being driven in tighter with each revolution of the wheel. It is easily and quickly applied, even by those least experienced in tire repairing. (The Auto Boot Manufacturing Company of California, Los Angeles, California.)

NEW TIRE ACCESSORIES.

A new tire valve, called the "Newsom," is so constructed that it does not depend alone on the air pressure against the valve gasket to hold the air in the tube, but has an additional protection against the possible escape of air, in a cap nut which is screwed to the upper end of the stem and by which the valve gasket is drawn firmly against the valve seat at the base of the housing, thereby sealing the valve and holding at a constant standard pressure the air in the tube. The gasket at the base of the valve is of rubber. The tire is inflated by removing dust cap, unscrewing cap nut, and adjusting air hose in the usual way. In order to replace the cap nut, it is only necessary to screw it on tightly with the fingers. Pliers should not be employed for this purpose.

The "Snap-Lox" dust cap shown here gets its name from the ease with which it snaps on. It consists of two parts —the bushing and the cap. The cap proper has four slots at its base which allows it to be snapped over the upper end of the bushing. (Newsom Valve Co., 2714 Lasalle street, St. Louis, Missouri.)

"Snap-Lox" Dust Cap.

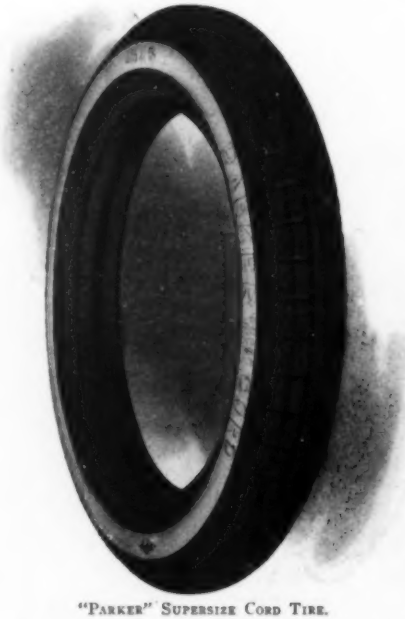
The "Newsom" Valve.

AN OFFICE AND HOUSEHOLD CONVENIENCE.

Every business office and household finds the rubber band a convenience or necessity. Neat boxes, with hinged covers, partitioned off to hold assorted sizes, sell at from 25 cents to $1 at retail. The bands are bright red, of good quality. (Eberhard Faber Rubber Co., Newark, New Jersey.)

ANOTHER SUPERSIZE CORD TIRE.

One of the newest supersize cord tires is the "Parker." It is built by hand of high-grade materials, carefully finished, and is distinguished by a white stripe running around the edge near



"Parker" Supersize Cord Tire.

the rim. The tread is a combination rib and non-skid, suited to both front and rear wheels. (The Parker Tire & Rubber Co., Indianapolis, Indiana.)

Practical Advice to Repairmen.

By A. B. Zwebell.

IN MY LAST ARTICLE[1] I related my experience of calling on some fifty-odd tire repairmen throughout the East, and I will now cover the high spots governing tire rebuilding, which should interest both the user of retreaders, as well as those contemplating going into this line of business.

Retreading is bound to be popular this year, and so long as tires are high in price, and there appears to be no reduction in cost of labor and material, and as worn treads represent only a fractional part of the actual tire—25 per cent to be exact, there remains 75 per cent of the actual tire to be used, which, after retreading will deliver from 2,500 to 5,000 miles service. An economical person would not throw away a perfectly good suit of clothes just because the lower edge of his trouser cuff was worn. He would have them repaired, because it represents only a fractional cost of the suit.

The tire manufacturer aims to build a balanced tire—one in which the tread is just thick and tough enough to last as long as the carcass. It would be poor business to follow another line, for if the tread was two inches thick (where one inch would suffice), a customer would naturally say the fabric was rotten if the tread was good and the fabric broken, or separated at the end of 5,000 miles. Reverse the situation; too much fabric is just as bad as not enough, for the tire could not perform the duty it was designed for, and instead of flexing it would be too stiff and eventually break down. Ask any tire manufacturer and he will tell you what has made the six-, seven- and eight-inch truck tire possible—cord construction, for one thing, and development. So you as a tire rebuilder, should be able to develop along the same line as the tire manufacturer, and soon be able to rebuild a tire giving 6,000 to 8,000 miles. What experience has done for the manufacturer it will do for you.

Data gathered from Texas to Canada and from New York to Seattle demonstrated that many combinations of repair material were being used. One repairman used one brand of cement, another brand of breaker fabric, another brand of cushion gum and still another brand of tread stock. This practice should be discouraged, for a manufacturer or jobber who sells you a cushion gum with a recommended cure of 50 pounds at 50 minutes, and a tread stock with a 50 pounds at 50 minutes cure is not giving you a combination that will make a successful retread. The cure recommendation no doubt was based on a flat pipe; in other words, when the uncured rubber comes in direct contact with the mold itself (rubber being a non-conductor of heat), the tread would be sufficiently cured, whereas the breaker fabric and cushion, not forgetting the cement, would be greatly undercured.

Retreading stocks are then not merely ordinary repair materials, but "specially compounded retreading stocks," designed, compounded and balanced. A retreaded tire requires a tread stock that is softer than the ordinary run of repair material. It resists road shocks and saves the carcass from bruising. It is important to use not too much or too little material; an extra ply of tread gum will not necessarily add a thousand miles of extra wear. It may decrease the wear of the tire even to a greater extent, for it will have a tendency to undercure the cushion and cement, which is a vital part of the entire job.

Don't use cheap repair materials and expect your retread to stand up. Tread stock that can ordinarily be purchased at 35 cents to 40 cents a pound will be expensive compared with tread stocks selling at 80 and 90 cents a pound. Comparing these stocks on a 34 by 4 carcass, the cost was found to be 35 cents more than when retreading with the 80- and 90-cent stock, but the results were worth the difference. Forget you are getting a bargain when a salesman offers you repair stocks at 35 cents a pound. Good crude rubber costs around 50 cents a pound, and when you buy retread stock make up your mind you are buying something else besides rubber. Analyze your own situation, cut off a pound of cheap gum, and a pound of high-grade stocks, compare the gage of the stock and figure the difference in yardage. Remember, rubber is one of the lightest ingredients going into the compound, and the lighter in weight per yard the higher the rubber content. Rubber stock has always been sold by the pound, but I contend it should be sold by the square yard or per tread of given dimensions.

The proper selection of a carcass is another vital matter, and while we can't look between the plys of fabric, we can avoid a lot of trouble by being careful, making a thorough examination and turning out a satisfactory job.

Start your work with a good foundation. Give the cement a clean new surface to cling to; remove the outside ply of fabric and you eliminate one of the worst enemies—dirt. Make up for the loss of the outside ply by vulcanizing a 3-ply liner inside, strengthening and building service into your tire. Vulcanize the liner in. Do not merely cement it in. By vulcanization it becomes a part of the tire, strengthening the weakness you overlook and cannot see.

Rebuild your tire. Do not simply retread it. When the tread is gone, your tire needs an overhauling and the cost of rebuilding is only a trifle more than retreading. Repairs should be made after the tread has been removed. Do not make a repair and retread at the same time. Your cure is not long enough to reach through to the inside of the tire. Make all repairs first and semi-cure, then rebuff the tire previous to cementing the carcass for the retread in the usual way.

Rim cuts can be successfully repaired, but judgment should be exercised by the repairman. A rim cut caused through accident, such as a bad bump or curb bruise, can be successfully repaired, for the chances are that the balance of the tire is in first-class condition. But a rim cut caused by a tire being run underflated is very much of a gamble to repair, for the chances are it is weak in another place and will soon blow out from the strains.

Resetting treads can be accomplished very successfully on the following occasions:

1. If the side walls of the carcass were oil-soaked and the rubber pulled off while being removed from the mold.
2. Where the carcass blew out at the bead after running a short distance.
3. When the fabric separated due to moisture.

To remove the tread, cut along the tread line with a knife around each side of the tire to the fabric. Pry loose with a prodding tool or screw driver and work a section loose. Then insert a broom handle and, with a little effort, time and patience this entire tread can be removed in one piece. An easier method is to cut across the tread and pull it off in the regular manner. The latter way is much easier, and the results are as good, the only difference being the fact that you have to resplice the tread, but this is an easy accomplishment.

In resetting a tread use one new ply of cushion gum only, as the breaker fabric will come off and adhere to the tread. It is advisable to let the cushion gum extend down the side of the tire one-half to three-quarters of an inch in order to piece in new strips of tread stock, trimming them off flush so as to make a neat job, otherwise there will be an offset. Don't over-

[1] "Practical Hints on Retreading," THE INDIA RUBBER WORLD, December 1, 1919, page 159.

look the resetting of the tread. Try it. If your first job does not make a creditable showing you will at least get the fundamental idea and your next attempt will surprise you.

A second curing operation is necessary, but this is the same as though you were curing up a freshly built carcass. A little caution should be used in seeing that the tread is laid straight and that you get the grooves of the tread in the grooves of the mold. Surprising results can be obtained with very little practice.

We learn a great deal from the other fellow, and here is a little "kink" I know will interest you. To follow the lines of least resistance is not always the best course to pursue, but in this case I am sure it is. The higher up you can cut off the old tread of a tire, the better the appearance of the finished tire. If you cut a tire down beyond the 45-degree you have to build it up with new stock costing money, and besides, you are apt to cause an overflow of stock if the sand bag does not fit snugly. To cut down the tire evenly all around saves time in rebuilding it, whereas, if you follow the line of the loose tread and sidewalls it is necessary to do a lot of piecing, which takes up time, and when the tire is finished you have the appearance of a patched-up job. The suggestion is to cut the tire evenly all around in the center of the 45-degree, if possible. If there are any loose particles of tread or side wall, lay them back, buff out the dirt, cement both the carcass and side walls, or even shoot in a small amount of cement with an oil gun. Then hang the tire so the cement will drain, place a piece of cushion gum between the carcass and the flap referred to, roll down the flap and you have effected a saving in labor, material and have an altogether better and neater looking job.

INTERESTING LETTERS FROM OUR READERS.

AS TO LABOR TROUBLES.

TO THE EDITOR:

DEAR SIR:—No one has found a panacea for labor trouble, for one reason at least. The problem has not been approached in the proper spirit. It is hard to get away from the old attitude of capital towards labor, of patronage; "I've got the money, and you should be glad to get the work!"

There is little doubt that capital has, by and large, been unfair towards labor, and in some aspects has been guilty of down right stupidity. For example: capital would have nothing to do with so-called scientific methods forced to it by the exigencies of business, and then rushed into, and made a mess of time studies as demonstrated in the piece-work rates made therefrom. Capital, thereupon, in many instances, made another almost criminal blunder in cutting down the rate where workmen made more than, in the judgment of the employer, constituted a fair day's wage, whatever that may be.

This resulted, as was to be expected, in distrust, and resort to all sorts of underground methods to beat the game that capital itself had "called."

This has gone on for years during which it has been apparent that, instead of being a corking good team, capital and labor were pulling in opposite directions, with the result that nobody was getting anywhere.

In the meantime, labor found out there was money in nursing a grouch, and has been making an extensive and more or less successful use of it.

As capitalistic methods aroused the antagonism of labor, so now labor methods are arousing the resistance of the great, patient, somewhat stupid middle-class American, who, if he loves anything, loves a square deal.

That capital cares particularly for the "signs of the times," I very much doubt, but having come to a clear impasse, their good sense demands that they find a real solution for the problems that are in a fair way to confound them.

There are some aspects of the labor attitude that indicate that it is beginning to be obsessed with the idea that it can do about as it pleases. One weak spot in such an attitude lies in the fact that it drags in the innocent bystander who is put to all sorts of inconvenience and loss in a game in which he has not been asked to assist. He doesn't relish such a one-sided game, and so, has let out a series of yells and kicks that has attracted considerable attention.

The innocent bystander is insisting on a square deal all around, and will continue to make himself more and more disagreeable until somehow, sometime, somewhere, the matter will be thrashed out to the mutual advantage of all.

Everywhere in this country is heard the demand for production. Labor, as organized, is doing its best to prevent it, self-hypnotized with the notion that to concede this point makes for its best interests. It is hard to understand this point of view, and it will have to be educated out. This can be done by making it an inducement for labor to change its attitude and this attitude can be changed from hostility to one akin to loyalty, by proving to it that improved machinery and processes will make more goods, and that the greater the production, the fatter the pay envelope.

EFFICIENCY.

GERMAN RUBBER TRADE CONDITIONS.

TO THE EDITOR:

DEAR SIR:—It is with great pleasure that I comply with your request to inform you regarding the changes brought about by the world war. As it is the whole world over, wages have increased considerably in Germany compared with those paid in times of peace. The rate of wages is four and five times as high now and amounts at present to 4 marks per hour. We hope that rate will be stagnant for some weeks or about two months to come. After this time no doubt a further increase will take place.

As far as the attitude of the workmen is concerned, a marked improvement has come about. There was a decided aversion against work when the war was over and the revolution broke out and in many cases the workmen showed themselves refractory. Workmen's councils (like the shop stewards in England) were formed and acted as plenipotentiaries. Any wish of the workingmen gave rise to long discussions between the workmen's council and the management. All this was brought about by the long duration of the war and by the bad physical state of the people which was due to the insufficient supply of food. Irrespective of this there was a great lack of employment on account of changing the industry for peace work. From the moment that food was better obtainable, the workmen naturally began to show more interest in their occupation. Thus matters have considerably improved, although we are yet far away from the ante-war state. The general institution of the eight-hour day on the other side caused a decrease in production, especially as regards coal mining and agriculture. It, however, now begins to dawn that working hours must be increased, as otherwise there is no help for Germany, having had to fight for five years in the war and having lost it after all.

On the whole, at all events regarding the state of affairs in our district, I am glad to be able to say that everything goes comparatively well, especially as the influence of the radical elements, which never was great to any extent, is now waning away altogether. All other rubber factories in Germany are laboring under almost similar conditions, as much as I can say.

All we want is coal and raw material, and from the moment we could be supplied with these regularly, the works could be kept up running uninterruptedly.

You will perhaps be aware that now the workmen are represented by their voted members—instituted by law—and rather valuable concessions have been made with regard to their allowing them to look into the balance and to discuss in a somehow limited manner all questions regarding employment and discharge

of hands. Therefore all the revolutionary achievements are being guaranteed by law. These concessions, however, do not satisfy the radical elements who would prefer a state of affairs similar to that in Russia, but for which our present socialistic government so far has shown no inclination.

WILLY TICHBEIN.

Continental-Caoutchouc und Gutta-Percha Compagnie, Hannover, February 17, 1920.

NEW TRADE PUBLICATIONS.

A NEW RUBBER JOURNAL, "THE RUBBER AGE," PUBLISHED monthly, has appeared in London. It has an attractive typographical dress, and handles the many sides of the rubber industry in Britain in an interesting manner. A glance at the future of the rubber industry makes an appropriate beginning.

The first number does not reveal the name of the editor, but mentions Herbert Standing, a rubber expert, as his assistant. The offices of the English "Rubber Age" are at 43 Essex Street, Strand, London, W. C. 2.

THE RUBBER FOOTWEAR CATALOG ISSUED BY THE KAUFMAN RUBBER Co., Kitchener, Ontario, Canada, shows that the special needs of the Far North and the wilds are well cared for, as well as the calls of civilization. Branches are established at Vancouver, Saskatoon, Calgary, Edmonton, Regina and Winnipeg, as well as in the older capitals of the Dominion, and pictures of the rubber boots for women, the heavy goods for fishermen, lumbermen, curlers, railroad men and pioneer farmers give some idea of how the requirements of the severe climate are met. Beside these are shown the rubber boots and shoes for city wear.

W. H. SALISBURY & Co., CHICAGO, ILLINOIS, ONE OF THE OLDEST rubber dealers in the world, dating from 1855, has issued an illustrated catalog of rubber goods and leather belting which gives some idea of the infinite variety of uses for india rubber. Every rubber article, from automobile tires, hose and belting to elastic bands and surgeons' finger cots and golf balls, is found in it. Tables of sizes and weights and power are given for every article, which are of permanent and general utility. It makes a handsome and artistic little book.

The Fujikura Densen Kabushiki Kaisha, THE FUJIKURA INsulated Wire and Cable Co., Tokio, Japan, issues in English a handsome catalog of its electric wires and cables. The company was started in 1885 by Z. Fujikura and has been developed largely through the efforts of its present president, T. Matsumoto. The greater part of the pamphlet is given up to lists of standard sizes, but it contains also illustrated descriptions of the various forms of cables, with the catalog numbers and code names. It is a characteristically artistic product, as well as useful to all concerned with the wire business.

"TRAINING FOR FOREIGN TRADE," BY R. S. MAC ELWEE, F. G. Nichols, and collaborators, is issued by the Department of Commerce, Washington, D. C. (Paper, 9¼ by 5¾ inches, 196 pages.) This government publication is a triumph of methodology, the subject being neatly subdivided according to library bureau systems. Various courses are outlined in very full detail after the manner of business schools, equal stress being put on important and unimportant matters.

The commercial division of the world seems practical. There are elaborate and interesting syllabuses on Latin America and on the Near East, which means here the Ottoman Empire and the Balkan states, with lesser ones in Russia, the Far East, meaning China, Japan, the Philippines and the Dutch East Indies, and the study of modern languages. The last would have been improved if good dictionaries had been indicated with the other text books. The pamphlet should be useful in many ways.

A HANDSOME ILLUSTRATED FOLIO PAMPHLET DESCRIBES THE "Advertising for 1920" of the Mohawk Rubber Co., Akron, Ohio. It shows the magazines and other publications used, the posters and sizes, the movie films and other forms of pictorial advertising and gives the text employed also.

AN INNOVATION IN CALENDARS IS THE LARGE SIZE "MINER'S Catalogue and Calendar" for 1920, issued by the Miner Rubber Co., Limited, Montreal, Canada, which runs from March, 1920, to February, 1921. Behind the double calendar sheets are pages describing the goods made by the company illustrated in colors. These are indexed on the margin, a dozen being given up to boots and shoes, one to hats, capes, coats and aprons, and one to sizes of packing. As the headquarters are in Montreal, Canadian holidays are marked on the calendar.

"RECOMMENDED SPECIFICATION FOR BASIC SULPHATE WHITE LEAD, DRY AND PASTE," prepared and recommended by the United States Interdepartmental Committee on Paint Specification Standardization, September 22, 1919; P. H. Walker, chairman; H. E. Smith, secretary. This pamphlet of eleven pages is Circular No. 85 of the Bureau of Standards. It covers sampling, laboratory examination of dry pigment and paste, and the preparation of the reagents required.

"DETERMINATION OF CELLULOSE IN RUBBER GOODS," BY S. W. Epstein, and R. L. Moore. Technologic Paper No. 154 of the Bureau of Standards. Analytic method and results.

THE *"Bulletin de la Société Belge d'Etudes Coloniales"* (Hayez, 112 rue de Louvain, Brussels), after a silence of four years on account of the war, came to life again in 1919, and naturally in the first numbers tried to tell the happenings of the war period. General Baron Bondy, the president of the society, himself writes the story of the fighting on the two German frontiers of Belgian Congo, while officials tell of the administrative and economic changes in the colony.

THE GENERAL TIRE & RUBBER CO., AKRON, OHIO, is conducting an advertising campaign with the tire slogan, "It goes a long way to make friends." A series of attractive posters with illustrations in black and white colors, reproduced from oil paintings by a famous artist, picture General tires making friends in many countries of the world.

THE EDITOR'S BOOK TABLE.

"TIME STUDIES AS A BASIS FOR RATE SETTING," BY DWIGHT V. Merrick. The Engineering Magazine Company, New York, 1919. (Leatherette, octavo, 5¾ by 9 inches, 366 + 18 pages.)

THIS IS a technical manual of scientific time study based on the ideas of the late Dr. Frederick W. Taylor, and is an excellent example of the results in business training of the modern efficiency methods. The author first presents the principles, methods and implements of time study, then gives an example by applying his principles to a line of machine tools giving the detailed times as established by study, and finally, in a series of appendices, gives detailed times for a number of other kinds of work, thus demonstrating the adaptability of his principles and methods. The book has illustrations and many diagram tables.

HEATON'S ANNUAL, 1920. THE COMMERCIAL HANDBOOK OF Canada and Boards of Trade Register. Heaton's Agency, 32 Church street, Toronto, Ontario, Canada. (Cloth, duo decimo, 4½ by 7¼ inches, 550 + 38 pages.)

Heaton's Annual, of Canada, is out for 1920, marking the sixteenth annual appearance of this extremely useful commercial handbook. The gazetteer of the towns of commercial importance in Canada is accompanied by maps. As usual, full information is given regarding customs and postal regulations; transportation facilities; financial institutions and methods; the resources, natural and industrial, of the various provinces; taxes, patents and other matters of importance. A directory of officials and Government departments, consuls and so forth is provided, with useful tables of weights, coins, interest and similar matters. It would be a convenience if Newfoundland could be included in the Annual, even if it is no part of the Dominion.

"FOR A BETTER AMERICA." BY A. H. ALDEN. A MANUAL FOR the consideration of the American voter. Published by the author.

Emphasizing the truism that "Politics ought to be the most honorable business in the world," Mr. Alden, who is widely known and esteemed in the rubber trade, in a neat brochure, appeals to the American electorate to take a livelier, patriotic, and non-partisan interest in the selection of the men who make and administer the nation's laws. Appreciating the usefulness of political parties, he contends that they should be tolerated only as a means for obtaining better government and not for rewarding mercenary politicians or aiding selfish labor, capitalistic, or other classes. He would have independent voters so aggressively organized that they would indeed hold the balance of power, and the great parties would eagerly court their favor, not merely by repressing vicious elements within their own ranks but by even vying with one another in presenting capable and deserving nominees. Especially does he urge the foundation of a central, independent bureau to teach the science of government and to impart to the oft-bewildered citizen that complete, truthful, unpartisan information on national affairs which is the right of every American.

THE OBITUARY RECORD.

A WELL-KNOWN NEW ENGLAND RUBBER MAN.

ALEC J. MAYBERRY, manager of the Boston, Massachusetts, branch of the United States Rubber Co., died suddenly of acute indigestion at his home in Allston, February 26, 1920, aged 49 years.

ALEC J. MAYBERRY.

Mr. Mayberry was born in Bangor, Maine, May 22, 1870, and attended the grammar and high schools there. He became associated with the retail shoe business in Bangor, later accepting a position as traveling salesman for the Adams Dry Goods Co., resigning in 1897 to accept a similar position with Converse & Pike, traveling in Maine. With this firm and the Tremont Rubber Co. he remained until 1910, when he went to the Springfield Rubber Co., Springfield, Massachusetts, as president and treasurer. In 1916, he was made manager of the Boston branch of the United States Rubber Co., a position which he held until his death.

Mr. Mayberry's untimely death was a severe shock to his fellow employes who greatly liked and respected him. During his rubber career he had become known throughout the trade in New England and elsewhere. He was a member of the Boston City Club, the Shoe Trades Club, and various bodies of the Masonic fraternity. His wife died about two years ago, and surviving him are his mother, two sisters, Miss Carrie Mayberry and Mrs. Joseph Stewart, and also a brother, Herbert A. Mayberry. Mr. Mayberry also leaves a step-son, Stanley A. Bridges, of Winthrop, Massachusetts.

DIRECTOR OF A NEW AKRON RUBBER COMPANY.

Judge Dayton A. Doyle, a director of the recently organized Doyle Tire & Rubber Co., died February 28, 1920, in Akron, Ohio, from hardening of the arteries, aged 53.

It was as a lawyer and as one of Akron's most prominent lifelong-residents that Judge Doyle was best known. Born September 27, 1856, he was graduated from the Akron high school, Buchtel College and later from the Cincinnati Law School with degrees of A.B. and LL.D. He was admitted to the bar in 1882 and entered law business with ex-Senator Dick. The firm was known as Dick, Doyle and Bryan with offices in Akron and Washington, D. C.

He later served two terms as city solicitor, two terms as referee in bankruptcy and two terms as judge of the Summit County Common Pleas Court, his term expiring January 1, 1918, when he returned to private practice.

He is survived by his widow, three sons—Dayton A., Jr., Arthur W. and Frank W., and three daughters—Harriet E. and Ida Ruth Doyle and Mrs. Harold Belzell.

PRESIDENT OF A. SCHRADER'S SON, INC.

Dr. Charles K. Cole, president of A. Schrader's Son, Inc., Brooklyn, New York, manufacturer of pneumatic tire valves and accessories, died recently at Pasadena, California, aged 67.

Dr. Cole was born in Plainfield, Illinois, and began the practice of medicine in Helena, Montana, upon completing his education, and there also became prominent in public, business and social affairs, holding many positions of trust. Later, at the instance of his friend George H. F. Schrader, he established his permanent residence in New York City at Chelsea-on-the-Hudson and in 1914 became president of the Schrader company.

Dr. Cole was a member of the Rocky Mountain Club, Montana Club, Old Colony Club, Aero Club of America, and also held membership in several fraternal organizations including the Elks, F. and A. M., Odd Fellows, Knights of Pythias and Ancient Order of United Workmen. He is survived by his widow, Harriet Gillett Cole, a son, Dr. Philip Gillett Cole, and a daughter, Miss Alma Gillett Cole. Interment was at Maple Grove Cemetery, Brooklyn, New York.

SECRETARY OF A TRENTON RUBBER CO.

Horace M. Royal, secretary of the Home Rubber Co., Trenton, New Jersey, dropped dead on March 20, 1920, at his home in Morrisville, Pennsylvania. He had been in poor health for the past year and suffered from heart trouble. The death came as a great shock to the members of his family and his friends in the trade.

Mr. Royal, who recently removed from Trenton to Morrisville, was born in Germantown, Philadelphia, and after receiving his early education there, went to Trenton, where he secured employment with the Home Rubber Co. He was promoted at different times and from a minor position rose to the office of secretary. His amiable disposition won him many friends. He was a member of Column Lodge, Free and Accepted Masons, the Scottish Rite and the Shrine. He is survived by his widow and three sons, Joseph, Edward and Horace M. Royal, Jr.

A RUBBER MACHINERY ENGINEER.

Melvin B. Newcomb, aged thirty-one years, chief engineer of the rubber machinery department of the Wellman-Seaver-Morgan Co., died March 13, after a short illness at his home, Akron, Ohio.

Mr. Newcomb was born in 1889 in Bridgeton, New Jersey. He received his mechanical engineering education at the University of Wisconsin. He has been engaged in engineering work with the I. P. Morris Co., Philadelphia, Pennsylvania. The Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin; The Wisconsin Engine Co., Corlis, Wisconsin, and The Firestone Tire & Rubber Co., Akron, Ohio.

In January, 1918, he joined the hydraulic turbine engineering department of the Wellman-Seaver-Morgan Co., and a few months later he was appointed chief engineer of the rubber machinery department.

Mr. Newcomb was a member of the American Society of Mechanical Engineers, the Cleveland Engineering Society and the Akron Engineering Society. He leaves his widow and two young daughters.

MACHINE SHOP FOREMAN OF THE AMERICAN RUBBER CO.

Michael F. Murphy, foreman of the machine shop of the American Rubber Co., East Cambridge, Massachusetts, died January 4, 1920, at his home, 49 Thorndyke street, Brookline, aged 69 years.

Mr. Murphy was born in South Boston April 2, 1850, and his association with the rubber business began many years ago in the employ of the late Robert D. Evans. He went to the American Rubber Co. on March 26, 1886. He is survived by a widow and nine children.

A VETERAN EMPLOYE OF W. H. SALISBURY & CO.

Charles Frederick Luders, who was connected for over half a century with W. H. Salisbury & Co., Inc., of Chicago, the well-known distributer and manufacturer of rubber goods, died in Chicago January 31, 1920, of heart failure. Mr. Luders was born in Wismar, Germany, February 24, 1850, and had therefore nearly attained his seventieth year. He came to Chicago when six years of age and entered the service of W. H. Salisbury & Co. as errand boy in 1864. He worked his way up till he became general manager. Mr. Luders was obliged to retire some years ago as cataracts formed on both his eyes from which he could not obtain relief. He leaves his widow and three children, Fred, Etta and Elmer Luders.

CHARLES F. LUDERS.

MRS. FANNIE E. THOMAS, WIDOW OF THE LATE DAVID F. and mother of John W. Thomas, vice-president, and Edwin T. Thomas, Minneapolis manager of the Firestone Tire & Rubber Co., died in Tallmadge, Ohio, January 6, 1920, at the age of 75 years. She was born in Pembrokeshire in Wales, December 27, 1844, and in 1848 was brought to the United States by her parents who settled in Tallmadge. She was one of a family of eleven children and was the mother of eight, seven of whom survive her, two daughters and five sons.

SAMUEL KRAUS, VICE-PRESIDENT OF THE EAGLE PENCIL CO., NEW York City, died January 3, 1920, in his sixty-ninth year. He was connected with the pencil company and its predecessors from the time he was fourteen years of age, becoming in time superintendent and later vice-president in charge of the manufacturing departments.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(783.) A reader asks for the addresses of concerns which have to sell scrap rubber belting suitable for cutting into soles.

(784.) An inquiry has been received for the addresses of manufacturers of machinery for making bathing caps.

(785.) A correspondent requests the addresses of concerns manufacturing tire half-soles.

(786.) A reader desires the addresses of makers of embossed metal plates for branding tires.

(787.) Request is made for the addresses of manufacturers of flexible or semi-flexible rubber that will withstand repeated boiling in water and retain its vitality.

(788.) A manufacturer asks for the addresses of the concern making the Bragg or any other automatic rubber mixer.

(789.) A rubber manufacturer asks whether there is manufactured at the present time a mixing mill with a cover which will prevent carbon black from flying about in the mill-room; if so, the manufacturer's address is desired.

(790.) Request is made for the addresses of manufacturers of golf ball molds.

(791.) A correspondent desires to have rubber spraying bulbs made in thousand lots. He has the molds.

(792.) An inquiry has been received for the addresses of the manufacturer who can supply policemen's clubs made of rubber.

(793.) A correspondent asks for formulas for making rubber or vulcanite grinding wheels.

(794) Request is made for the addresses of manufacturers of forms for making toy balloons.

(795.) A reader asks for the percentage of antimony and tin melted together by the average hard-rubber manufacturer for casting molds for hard-rubber goods.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from the following district or cooperative offices. Requests for each address should be on a separate sheet, and state number.

DISTRICT OFFICES.	COOPERATIVE OFFICES.
New York: 734 Customhouse.	Cleveland: Chamber of Commerce.
Boston: 1801 Customhouse.	Cincinnati: Chamber of Commerce; General Freight Agent, Southern Railway, 96 Ingalls Building.
Chicago: 504 Federal Building.	Los Angeles: Chamber of Commerce.
St. Louis: 402 Third National Bank Building.	Philadelphia: Chamber of Commerce.
New Orleans: 1020 Hibernia Bank Building.	Portland, Oregon: Chamber of Commerce.
San Francisco: 307 Customhouse.	Dayton, Ohio: Dayton Chamber of Commerce.
Seattle: 848 Henry Building.	

(32,060.) President of commercial organization in Bulgaria desires to secure an agency for rubber shoes. Correspondence may be in English.

(32,086.) A merchant in Italy desires to secure an agency for rubber articles, bandages, and tires for automobiles and bicycles. Quotations f. o. b. Italian port. Correspondence may be in English.

(32,111.) Firm in the Netherlands holding interests in rubber plantations desires to purchase and secure an agency for machinery and tools in general for Dutch East Indian rubber plantations. Quote c. i. f. Netherlands ports and f. o. b. San Francisco for Dutch East Indies. Payment against documents.

(32,138.) A mechanical engineer from Switzerland desires to secure an agency in that country for belting, automobiles and accessories and tires.

(32,146.) A company of electrical goods dealers in Czecho-Slovakia wishes to purchase and secure an agency for insulated wires, and rubber for technical purposes. Catalogs requested. Cash, United States currency. Correspondence in Czech or German.

(32,158.) A commercial chemist in England desires to secure an agency for medicated rubber adhesive plasters and similar articles of druggists' sundries.

(32,162.) Commercial agent in Italy wishes an agency for the sale of pneumatics and automobile and motorcycle accessories. Quote c.i.f. Geneva or Naples. Payment against documents. Correspondence may be in English.

(32,194.) Merchant in Belgium wishes to purchase or to secure an agency for the sale of men's india rubber collars. Correspondence and catalogs should be in French.

(32,262.) A manufacturer in South Africa desires to purchase waterproof canvas for coaches. Quote f.o.b. New York. Payment through bank against documents.

(32,274.) A company in Greece wishes to buy dental rubber. Correspondence in French or modern Greek.

(32,275.) Importer in Argentina desires agency for the sale of rubber goods, and oiled and waterproofed clothes. Correspondence may be in English.

(32,315.) Commercial agent in British West Africa desires to represent manufacturers in the sale of automobile tires.

(32,311.) Firms in Palestine and Egypt wish to secure agencies for the sale of rubber overshoes. Quote c.i.f. ports of Palestine.

(32,328.) Commission agent and wholesaler in Syria desires to communicate with exporters of rubber goods.

(32,331.) A firm in Norway desires to purchase rubber and rubber goods. Quote f.o.b. American port or c.i.f. Norwegian port. Payment through banks.

(32,349.) A firm of importers in Syria wishes to communicate with exporters of rubber shoes, rubber and rubber goods.

JUDICIAL DECISIONS.

TUFFORD HEEL PATENTS UPHELD.

RUBBER HEEL MAKERS AND DEALERS have followed with exceptional interest the long struggle in many courts of the I. T. S. Rubber Co., Elyria, Ohio, to establish its sole right to manufacture and market the type of heel invented by John G. Tufford, of Elyria, the patents on which had been assigned to the I. T. S. company. Some of the largest concerns in the rubber trade were made defendants in the lawsuits begun by this company, and the alleged infringers were enjoined from further manufacture and sale of the heels said to be identical with those described in the Tufford letters patent.

Nine favorable decisions were obtained by the I. T. S. company, and one decision was adverse. The company took the latter to the United States Circuit Court of Appeals, and it reversed the unfavorable decision. Defendants in the litigation included the Panther Rubber Manufacturing Co., Boston, Massachusetts, the Fetzer & Spies Leather Co., of Cleveland, Ohio, the Elyria National Rubber Heel Co., Elyria, Ohio, the United States Rubber Co., New York City, H. H. Hackman & Co., Cleveland, Ohio, and the Consolidated Rubber Co. and the Hill Rubber Co., both of Elyria, Ohio.

The Elyria National Rubber Heel Co., after the United States District Court at Cleveland had enjoined it from manufacturing and had declared the Tufford patent valid and having been infringed, took the decision to the United States Circuit Court of Appeals for the Sixth Circuit and an early hearing is expected in that tribunal.

The Tufford patent on the heel is Reissue No. 14,049, and on the mold for making the heel No. 1,177,833, the latter having been granted April 4, 1916. The salient feature of the invention is the "curve," a concavity or part-spherical recess throughout the upper surface of the heel, which characteristic rival concerns are alleged to have duplicated.

Reference to this peculiarity of the heel is thus made in the Tufford patent grant: "When the heel or lift is placed against the flat under surface of a leather or other shoe heel and pressure applied to the resilient heel or lift, a vacuum or suction cup may be formed whereby the heel or lift will be held to the shoe temporarily until the nails can be applied. A further object of the invention is to produce a heel, which, when applied to the shoe, will have a flat tread surface and which may be equipped with fastening devices so located that the heel can be easily trimmed down to the required size."

I. T. S. RUBBER CO. *vs.* PANTHER RUBBER MANUFACTURING CO.—United States Circuit Court of Appeals, First Circuit. Decided May 29, 1919; rehearing denied, July 23, 1919. Appeal from the District Court of the United States for the District of Massachusetts in the matter of the Tufford patent No. 1,117,833 for making rubber heels.

The decision states distinctly that the device was not anticipated by the Nerger mold; that the claim for the particular structure and the method of applying it is valid and was infringed. The decision of the lower court overruled and appeal allowed. ("Federal Reporter," Volume 260, page 934; "The Official Gazette," United States Patent Office, February 17, 1920.)

UNITED STATES RUBBER CO. *vs.* I. T. S. RUBBER CO.—United States Circuit Court of Appeals for the Sixth Circuit. Decided October 7, 1919. Appeal from a preliminary injunction granted by the District Court in the matter of the Tufford patent.

Decree affirmed with the statement that the infringement question is settled by the Fetzen & Spies Leather Co. decision, except as to one minor point, which is obscured by its wording. While the court does not believe that it makes any difference, it remits that point to the District Court for decision. ("Federal Reporter," Volume 260, page 947.)

FETZER & SPIES LEATHER CO., *vs.* I. T. S. RUBBER CO.—United States Circuit Court of Appeals for the Sixth Circuit. Appeal from the District Court of the United States for the Eastern Division of the Northern District of Ohio in the matter of the Tufford patent for rubber heels, reissue No. 14,049. Decided October 7, 1919.

Decision states that the delay in applying for the reissue was reasonable; that the Tufford patent is valid as against both the Nerger and the Ferguson patents, not only because the Court of Appeals for the First District has so decided, but because the process is original as the Court demonstrates in detail. It also asserts that the real contestant is the Foster Rubber Co. Judgment of District Judge affirmed and appeal disallowed. ("Federal Reporter," Volume 260, page 939; "The Official Gazette," United States Patent Office, February 3, 1920.)

MUNGER *vs.* FIRESTONE TIRE & RUBBER CO. }
MUNGER *vs.* THE B. F. GOODRICH CO. } UNITED STATES Circuit Court of Appeals for the Second District. Decided November 12, 1919.

Decree of District Court, dismissing bills of discovery against the two companies, is affirmed. Louis De F. Munger, inventor of an improvement in pneumatic tires, after the expiration of his patent, brought suit against both companies for infringement, and asked in the bills of discovery that the companies should furnish him with detailed statements regarding their business and profits. The District judge refused to allow this until after the infringement suit had been tried and decided. ("Federal Reporter," Volume 261, page 921.)

MODIFICATIONS OF BRITISH PATENT LAWS.

The term for which British patents are valid is made by the new Patents Act, 16 years instead of 14, and the period within which complete specifications can be lodged and applications with provisional specifications can be filed is extended to nine months instead of six. A patentee who can show that he suffered loss or damage in regard to his patent on account of war conditions may obtain an extension of the time of his patent.

By the new act the patentee at any time after the patent is sealed, may request to have it endorsed with the words "License of Right." An inventor does not prejudice his right to apply for a patent by describing it before a learned society; he must give notice beforehand, however, and must apply for his patent within six months of the reading or the publication of his description.

RUBBER ENTERS INTO THE MAKING OF MANY OF THE EXHIBITS in the Toy Fair recently held at the Hotel Imperial in New York City. The United States Rubber Co. exhibited dolls and animals in red rubber as well as white, while rubber continues to be used as the motive power for toy airplanes and submarines, for stamps, for tires, and other parts of toys.

News of the American Rubber Trade.

DIVIDENDS.

THE Brunswick-Balke-Collender Co., Chicago, Illinois, has declared its quarterly dividend of one and three-quarters per cent, payable April 1 on preferred stock of record March 30, 1920.

The Delion Tire & Rubber Co., Baltimore, Maryland, has declared its regular quarterly dividend of two per cent, payable April 1 on preferred stock of record March 20, 1920.

The Driver-Harris Co., Harrison, New Jersey, has declared its quarterly dividends of one and three-quarters per cent on preferred stock and of two per cent on common stock, for the period ended March 31, payable April 1 on stock of record March 21, 1920.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has declared the following quarterly dividends: Initial, 75 cents per share, payable April 1 on common stock of record March 15, placing stock on twelve per cent rate on the $25 par value; one and three-quarters per cent, payable June 15 on second preferred stock of record May 31, 1920.

The General Electric Co., Schenectady, New York, has declared its quarterly dividend of $2 per share, payable April 15, on stock of record March 20, 1920.

The Hodgman Rubber Co., Tuckahoe, New York, declared a dividend of $1.13 per share, payable February 1 on preferred stock of record January 15, 1920. This stock was issued December 12, 1919.

The Kelly-Springfield Tire Co., New York City, has declared its quarterly dividend of $1.50, payable April 1, on six per cent preferred stock of record March 15, 1920.

The Keystone Tire & Rubber Co., Inc., New York City, has declared its regular quarterly dividend of three per cent, payable April 1, on common stock of record March 15, 1920.

The National Aniline & Chemical Co., New York City, has declared a quarterly dividend of one and three-quarters per cent for the period ended March 31, payable April 1 on preferred stock of record March 15, 1920.

The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, has declared its quarterly dividend of 75 cents per share on outstanding no par common stock of record February 20, payable March 1, 1920.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has declared its regular quarterly dividends of one and three-quarters per cent on preferred stock and one and one-half per cent on common stock of record March 15, both payable March 31, 1920.

The United Shoe Machinery Corp., Boston, Massachusetts, has declared the following dividends: One and one-half per cent on preferred capital stock and 50 cents per share on common capital stock, both payable April 5 on stock of record March 15, 1920.

NEW INCORPORATIONS.

A. & A. Raincoat Co., The, February 18, 1920 (Massachusetts), $25,000. Jacob, Charles and Philip Aronson—all of 24 Powellton Road, Dorchester, Massachusetts. Principal office, Boston, Massachusetts. To manufacture, purchase and sell at wholesale raincoats and all other goods of which rubberized cloth is a component part.

Ad-Mor-Myler Rubber Co., March 2, 1920 (Delaware), $1,000,000. M. L. Horty; M. C. Kelly; S. L. Mackey—all of Wilmington, Delaware. To manufacture rubber appliances.

Aetna Rubber Co., The, May 1, 1919 (Ohio) $20,000. T. Ferry, president; W. H. Staring, vice-president; A. J. Huston, vice-president; E. T. Slinkard, secretary and treasurer; G. R. McKay, director. Principal office, 811 East 79th street, Cleveland, Ohio. To manufacture high grade electricians' and acid gloves. (Reorganization.)

Associated Tire Stores Corp., January 29, 1920 (Delaware), $30,000,000. T. L. Croteau; M. A. Bruce; S. E. Dill—all of Wilmington, Delaware. To manufacture tires, etc.

Auto Outfitters, Inc., February 25, 1920 (New York), $10,000. D. D. Vogel, G. H. Howard, both of 1105 Bedford avenue, Brooklyn; A. Allenberg, 3 East 44th street, New York City—both in New York. Principal office, Brooklyn, New York. To manufacture tires.

Channel Packing & Rubber Co., Inc., February 26, 1920 (New York), $50,000. T. P. Hastings, 73 Pineapple street; A. M. Hardes, 13 St. Andrews street—both of Brooklyn; F. J. O'Conner, Hillburn—both in New York. To manufacture rubber goods, engineers' supplies, etc.

Eagle Tire Co., The, November 14, 1919 (Ohio), $25,000. P. W. Stanley, president; M. Winkler, vice-president; W. Werner, secretary and treasurer. Principal office, 806 Prospect Avenue East, Cleveland, Ohio. To manufacture tires and tubes.

Emery Tire & Rubber Co., January 17, 1920 (Washington), $60,000. W. A. Emery; C. C. Howell; H. Tarbox. Principal office, 104 23rd Avenue North, Seattle, Washington. To sell tires and automobile accessories.

Grayson Automotive Corp., March 9, 1920 (New York), $20,000. B. Levy; B. Swiryn; S. J. Grayson—all of 403 Amsterdam avenue, New York City. To manufacture automobile tires and accessories.

High Grade Garter Co., Inc., March 3, 1920 (New York), $5,000. H. Abrotsky, 382 Watkins street; R. Hammer, 338 Vermont street, both of Brooklyn; W. Jacobs, 299 Broadway, New York City—both in New York. To manufacturé garters.

Kentucky Tire & Rubber Association, The, November 13, 1919 (Kentucky), $1,000,000. H. P. Didriksen, president; W. R. White, executive vice-president; J. E. Peterson, secretary. Principal office, 502 Realty building, Louisville, Kentucky. To manufacture tires.

Ludington Rubber Co., November 8, 1919 (Wisconsin), $100,000. A. H. Gruber, president and general manager; G. E. Dorrell, vice-president—both of Ludington, Michigan; W. G. Gruber, vice-president; B. G. Hayden, secretary—both of Milwaukee, Wisconsin; C. D. Moriarty, treasurer, Ludington, Michigan. Principal office, 1015 Trust Company building, Milwaukee, Wisconsin. Factory, Ludington, Michigan. To manufacture tire casings.

Maumee Tire & Rubber Co., The, February 21, 1920 (Ohio), $2,500,000. G. G. Morrison, president and general manager, 1912 Jefferson avenue, Toledo; R. Butler, vice-president and superintendent of production, 116 Parker avenue, Barberton; C. F. Weissenberger, secretary and treasurer, 2133 Vermont avenue; J. B. Patterson, sales director, 440 West Bancroft street—both of Toledo—all in Ohio. Principal office, 705 Madison avenue, second floor, rear suite, Toledo, Ohio. To manufacture, buy, sell and deal in rubber tires and inner tubes for automobiles or other vehicles.

Mohawk Valley Amalgamated Tire Stores Corp., March 16, 1920 (New York), $24,000. Stanley and Arthur Newman; G. J. Bates—all of 1934 Broadway, New York City. To manufacture tires, etc.

Montford Cist Rubber Co., December 5, 1919 (Oklahoma), $150,000. E. C. Osborn; L. Smilie; H. L. McCracken—all of Oklahoma City, Oklahoma. Principal office, Oklahoma City, Oklahoma.

New Haven Rubber Mould & Equipment Co., March 10, 1920 (Connecticut), $100,000.

Northwestern Motor Supply Co., January 20, 1920 (Wisconsin), $25,000. William W. and William K. Strickland, E. F. McCausland. Principal office, Superior, Wisconsin. To deal in all kinds of motor and automobile accessories, etc.

No-Tube Tire Filler Co., Inc., August 30, 1919 (New York), $100,000. W. J. Gallagher, president and treasurer; D. S. Rose, vice-president; K. T. Gallagher, secretary. Principal office, 789 Eleventh avenue, New York City. To manufacture tire fillers.

Palmer Tire Corp., January 22, 1920 (Delaware), $500,000. M. L. Rogers; T. A. Irwin; W. G. Singer—all of Wilmington, Delaware. To manufacture rubber tires, etc.

Polish-American Rubber Mfg. Co., February 24, 1920 (Delaware), $2,000,000. T. L. Croteau; C. H. Blaske; S. E. Dill—all of Wilmington, Delaware.

Quinlan-Treiber Corp., March 16, 1920 (New York), $10,000. J. T. and L. M. Quinlan—both of Lynbrook; P. J. Treiber, 97 Chauncey street, Brooklyn—both in New York. To manufacture tires, etc.

Rappole & Robbins, Inc., March 18, 1920 (New York), $100,000. G. Rappole, S. B. Robbins, A. Volz—all of Jamestown, New York. Principal office, Jamestown, New York. To manufacture tires and automobile accessories.

Record Sales Co., February 28, 1920 (New York), $100,000. W. W. Griffin, 14 Church street; C. B. Cler, 280 Broadway, both of New York City; W. E. Severn, 636 Eastern Parkway, Brooklyn—both in New York. Principal office, 14 Church street, New York City. To sell tires, tubes, etc.

Reindeer Tire & Rubber Co., Inc., March 12, 1920 (New York), $50,000. M. F. Dennis, P. M. Tonn, A. Foy—all of 112 West 23rd street, New York City. To manufacture auto tires and rubber goods.

Re-Nu Tire & Rubber Co., Inc., March 4, 1920 (New York), $10,000. G. Snyder, 271 Madison avenue; G. Graff, 87 Pike street, both of New York City; J. Messner, 1182 Putnam avenue, Brooklyn—both in New York. To rebuild old auto tires, etc.

Rochester Webbing Corp., March 16, 1920 (New York), $50,000. W. D. Smith, E. Kranz—both of East Rochester; W. C. Patterson, Fairport—both in New York. Principal office, East Rochester, New York. To manufacture woven fabrics, auto supplies, etc.

Rub-Tex Products, Inc., March 1, 1920 (Indiana), $750,000. S. C. Legge, treasurer and general manager; L. E. Klug, general superintendent and production manager. Principal office, 454 Lemcke Annex, Indianapolis, Indiana. To manufacture rubber goods, etc.

Rubber Corp. of America, March 10, 1920 (Delaware), $2,000,000. T. L. Croteau, M. A. Bruce, S. E. Dill—all of Wilmington, Delaware.

Scoville & Trevors, Inc., March 22, 1920 (New York), $10,000. Walter A. and Agnes M. Scoville, both of 65 Guernsey street; G. A. Trevors, 703 Manhattan avenue—all of Brooklyn, New York. Principal office, Brooklyn, New York. To deal in tires, etc.

Simplex Rubber Co., February 18, 1920 (Massachusetts), $50,000. G. F. Quinn, Beachmont; W. F. Killip, 134 Bellingham avenue, Revere; A. T. Parsons, 89 State street, Boston—all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in rubber, rubber goods and products.

Simpson Universal Tire Co. of New York, February 26, 1920 (New York), $300,000. A. Simpson, A. Goetz, A. Scholl, Jr.—all of Richmond Hill, New York. Principal office, Jamaica, New York.

Smith Tire Corp., March 9, 1920 (Delaware), $16,500,000. G. V. Reilly, S. B. Howard, R. K. Thistle—all of New York. To manufacture automobile tires, tubes, etc.

Taintor Trading Co., Inc., January 15, 1920 (New York), $60,000. S. Taintor, president; W. Boyd, vice-president; J. Steel, treasurer; E. A. Stothers, secretary. Principal office, 9 State street, New York City. To do a general trading business.

Trans-Continental Tire & Rubber Co., Inc., February 27, 1920 (New York), $20,000. W. W. Lesselbaum, F. Druss, E. Eisenstein—all of 128 Broadway, New York City. To manufacture tires.

United Tire Stores Co., Inc., March 6, 1920 (Delaware), $10,500,000. T. L. Croteau, M. A. Bruce, S. E. Dill—all of Wilmington, Delaware. To manufacture and sell tires.

Unsinkable Life Saving Suit Co., Inc., March 10, 1920 (New York), $5,000. W. T. McCoy, 216 West 138th street; C. Mardenbro, 312 West 59th street; R. Washington, 427 West 52nd street—all of New York City. To manufacture rubber suits, etc.

REPUBLIC RUBBER CORPORATION'S NEW PRESIDENT.

E. F. JONES, recently elected president of The Republic Rubber Corporation and the Republic Rubber Co., Youngstown, Ohio, succeeding Guy E. Norwood, resigned, brings to the company thirty years of practical experience in the manufacturing field.

E. F. JONES.

For ten years Mr. Jones was identified in various responsible capacities with the Illinois Steel Co.; then for a twelve-year period with the International Harvester Co., which he served in all departments; later with the Morgan Spring Co. and National Manufacturing Co.; next as president of the Clinton-Wright Wire Co., Worcester, Massachusetts, and more recently as vice-president and general manager of the Elyria Iron & Steel Co., Cleveland, Ohio.

The majority of the directors of The Republic Rubber Corp. consists of iron and steel manufacturers in the Youngstown district, which accounts in a measure for the election of Mr. Jones. He has, however, established a reputation as a capable executive, organizer and business man of exceptional ability that renders his acquisition most fortunate. It is taken to mean the beginning of a new era in the history of the company.

THE REPUBLIC RUBBER CORPORATION.

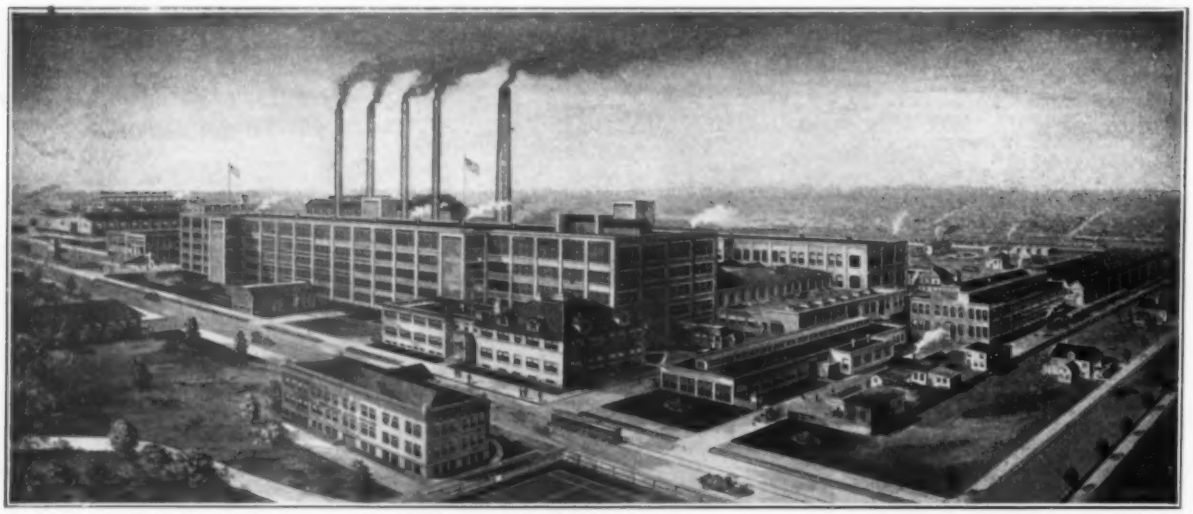
THE REPUBLIC RUBBER CORPORATION had its first start nearly twenty years ago when a rubber manufacturing company was organized at Youngstown, in Mahoning County, Ohio, largely through the exertions of John Scott McClurg, who became the manager. It was incorporated as the Mahoning Rubber Co. on February 28, 1901, but by the end of the year it had been found advisable to change the name, and it became the Republic Rubber Co. on December 2.

The capital of $400,000 was easily raised locally as Youngstown hoped to be able to rival its neighbor, Akron, in the rubber industry. The Wick family was interested in the enterprise, and after H. W. Wick, the first president, resigned, his son-in-law, Warner Arms, was elected in his place and held that office until his death in 1910.

From the start the company manufactured rubber goods of all descriptions, fire hose, balata belting, mechanical goods, and molded goods. By 1905 it had taken up tires, both solid and pneumatic. Other specialties of the company were the side wire wheel and golf balls. In that year the capital was increased to $1,000,000. The business continued to expand rapidly, and in 1912 under Thomas L. Robinson, Mr. Arms' successor as president, the capital was increased to $10,000,000.

The spread of the business made it advisable to establish subsidiary companies in various parts of the country, so that when the company was reorganized in 1917, it included the Republic Rubber Co. of New York in New York City; of Massachusetts at Boston; of California at San Francisco; of Texas at Dallas; of Pittsburgh, and the Republic Rubber Co., Inc., at London, England.

On October 6, 1917, the business of the company was taken over by the Republic Rubber Corp., incorporated under the laws of New York with a capital of $11,250,000. The plant at Youngstown then covered 45 acres, with buildings containing 15 acres of floor space, where rubber goods of all kinds were manufactured and 3,000 tires could be turned out daily. With it was then amalgamated the Canton Blackstone Co., which had been the Knight Tire & Rubber Co., of Canton, Ohio, with seven acres



PLANT OF THE REPUBLIC RUBBER CORPORATION, YOUNGSTOWN, OHIO.

of ground, four acres of floor space and the capacity to turn out 1,000 tires a day. The company was incorporated in Ohio in June, 1911, and was amalgamated with the Republic company in 1917; its name was changed to Canton-Blackstone in April, 1919.

In May, 1917, Guy S. Norwood succeeded Mr. Robinson as president of the Republic Rubber Co., coming from The B. F. Goodrich Co. to take the position. The other officers of the corporation were: L. T. Petersen, Harvel J. Woodward and W. W. Roe, vice-presidents; C. F. Garrison, secretary, and M. I. Arms, 2nd, treasurer.

In February, 1920, E. F. Jones was elected president to succeed Guy E. Norwood who resigned. The names of the other officers recently elected will be announced later.

ANNUAL REPORT OF THE B. F. GOODRICH CO.

Sales for the calender year 1919 were the largest in the history of The B. F. Goodrich Co., Akron, Ohio, aggregating $141,343,419, on which the company earned net profits amounting to $17,304,813, after making the usual charges for maintenance, depreciation, bad debts and other items, but before making allowance for such Federal income and excess profit taxes as may be finally determined. In 1918 the sales totaled $123,470,187, and in 1917, $87,155,072.

In consequence of this greatly increased business the dividend on common stock has been advanced from a $4 to $6 per annum basis beginning with the February, 1920, dividend. Sales have been limited only by the ability to produce, and when the additional manufacturing facilities now under construction are brought into production this year, the annual business may exceed $200,000,000.

The consolidated balance sheet, profit and loss, and surplus accounts for the year ended December 31, 1919, are as follows:

CONSOLIDATED BALANCE SHEET.

ASSETS.

Capital Assets:		
Real estate, buildings, plant, machinery and sundry equipment, less reserve for depreciation of $7,565,375.97, including special reserve, per balance sheet, December 31, 1918, of $1,447,540.22 applied as obsolescence for years 1918-1919	$19,486,065.22	
Patents and trade-marks	1.00	
Goodwill	57,798,000.00	$77,284,066.22
Investments and Advances to Other Companies		3,331,360.93
Foreign Associated Companies, etc., representing the net investment at December 31, 1919		6,054,451.19
19,066 Shares of 7 Per Cent Cumulative Preferred Stock in Treasury at par		1,906,600.00
Current Assets:		
Raw materials, partly manufactured and finished stock	$54,184,974.63	
Trade accounts receivable, after deducting reserve to cover doubtful accounts, discounts and allowances	23,011,543.22	
Other accounts receivable	550,208.24	
Bills receivable	44,688.24	
United States Liberty Loan Bonds, at market prices	2,591,535.32	
Cash in banks and on hand	5,491,500.07	
		85,874,449.72
Deferred Charges to Future Operations:		
Prepaid insurance, interest, taxes, etc		1,264,990.25
		$175,715,918.31

LIABILITIES.

Capital Stock:			
600,000 shares of common stock of the par value of $100 each		$60,000,000.00	
450,000 shares of 7 per cent cumulative preferred stock of the par value of $100.00 each	$45,000,000.00		
Deduct—54,000 shares of preferred stock redeemed and cancelled, including $900,000 redeemed during 1919	5,400,000.00	39,600,000.00	$99,600,000.00
100,000 shares of 7 per cent cumulative preferred stock of the par value of $100.00 each, authorized and Unissued	$10,000,000.00		
Current Liabilities:			
Bills payable—general	$22,068,000.00		
Bills payable—secured by deposit of portion of United States Liberty Loan Bonds, per contra	2,000,000.00	$24,068,000.00	
Accounts, payable		5,864,069.30	
Sundry accrued liabilities		1,255,739.23	
			31,187,808.53
Reserves for:			
Contingencies		$2,000,000.00	
Pensions		500,000.00	
Amortization of war facilities		1,225,063.73	
			3,725,063.73
Surplus[1] (per annexed account), bore providing for such income and war excess profits taxes as may be finally determined			41,203,046.05
Contingent Liabilities:			
Bankers loans to employes, secured by deposit of stock of this company, purchased by them, and by the guarantee of the company	956,801.36		
			$175,715,918.31

[1](The common stock dividend of 1 per cent, declared October 15, 1919, payable February 16, 1920, has not been deducted from the surplus shown above.)

PROFIT AND LOSS ACCOUNT.

Net sales		$141,343,419.45
Deduct—Manufacturing, selling and general administration expenses		121,579,265.35
		$19,764,154.10
Add—Miscellaneous income		576,060.34
		$20,340,214.44
Deduct:		
Provision for depreciation	$1,835,539.17	
Interest on bills payable, etc	1,199,861.94	
		3,035,401.11
Net profit (before providing for such Income and Excess Profits Taxes as may be finally determined), carried to surplus account		$17,304,813.33

SURPLUS ACCOUNT.

Balance, January 1, 1919		$35,119,987.38
Less reserve for amortization of war facilities		1,225,063.73
Total		$33,894,923.65
Add—Net profit for the year ended December 31, 1919		17,304,813.33
Premium and accrued dividends received on sale of 150,000 shares of additional preferred stock issued		387,000.00
		$51,586,736.98
Deduct—7 per cent dividend on preferred stock (Nos. 28 to 31 inclusive) for the year ended December 31, 1919	$2,247,000.00	
4 per cent dividend on common stock (Nos. 16 to 19 inclusive) paid during 1919	2,400,000.00	
Reduction of preferred stock purchased, from cost to par	77,778.46	
Additional appropriation for pension fund		100,000.00
Income and war excess profits taxes paid during the year, applicable to 1918 earnings	5,558,912.47	
		10,383,690.93
		$41,203,046.05

STATEMENT OF HOOD RUBBER COMPANY.

Hood Rubber Company's sales for the 1919 calendar year totalled $22,969,664, compared with $22,341,081 in 1918, $18,573,765 in 1917, $11,666,501 in 1916 and $9,083,693 in 1915. Of 1919 total sales, $6,593,984 was from tires, compared with $4,834,925 in 1918.

Balance sheet as of December 31, 1919, compares with the two previous years as follows:

ASSETS.

	1919	1918	1917
Plant (real estate, machinery, etc.)	$4,200,000	$4,000,000	$4,000,000
Merchandise	7,156,022	8,012,862	4,075,021
Accounts receivable	3,111,907	1,202,350	4,323,933
Cash	1,084,348	1,022,878	930,680
Investments in other corporations	410,400	285,400	184,400
Patents	1,000	1,000	1,000
Liberty Bond account	103,404	521,020	233,097
Total	$16,067,081	$15,045,510	$13,748,131

LIABILITIES.

Capital stock common	$3,000,000	$3,000,000	$3,000,000
Preferred	5,000,000	4,000,000	4,000,000
Notes payable	4,860,000	4,725,000	4,150,000
Liberty Bond account	.....	505,000	285,840
Accounts payable	343,128	148,905	.....
Surplus	2,863,953	2,666,605	2,312,291
Total	$16,067,081	$15,045,510	$13,748,131

The treasurer's report states that earnings for 1919 were less than the three years previous, as prices of footwear were lower and costs higher in 1919 than in 1918. Prices on footwear were advanced on January 1, 1920, and this increased margin, together with the increased efficiency of the factory and the economy of the Hood Rubber Products Co. should show satisfactory earnings for 1920. Net quick assets have increased from about $5,400,000 on December 31, 1918, to about $6,252,000 on December 31, 1919.

THE ADVANCE IN TIRE PRICES.

The long anticipated rise in the price of tires has gone into effect. It became inevitable when the shortage in the necessary qualities of cotton, and the resultant inability to manufacture in sufficient quantities the fabrics made from it, became known. The increase in tire prices would have been made last October had it not been for the foresight of many companies, which secured supplies for some months ahead. Another cause for higher prices is the reduction in tire prices which many large companies made last spring so that in some cases the present increase merely restores the prices that prevailed before May.

One of the largest tire companies, by increasing the price of both fabric and cord casings 17½ per cent, restores the prices it charged before May; its plain tread fabric tires are 10 per cent below the price of fabric and cord casings, and 5 per cent below their rib-tread cord casings. Tubes have been advanced 15 per cent, motorcycle casings and tubes 20 per cent, cord pneumatic truck tires and tubes 20 per cent, solid and cushion tires from 10 to 15 per cent.

Other large companies have made advances such as these: fabric casings, 18 per cent; cord casings, 20 per cent; gray tubes, 10 per cent; red tubes, 7½ per cent; fabric and cord tires, 17½ per cent; red and gray tubes, 15 per cent; plain tread fabric tires, 25 per cent; fabric non-skid, 17½ per cent; plain fabric, 25 per cent; ribbed cord, 10 per cent; non-skid cord, 8 per cent; tires and tubes, 15 per cent.

Apparently one-sixth of the former price has been added on the average to the cord and fabric tires and from one-tenth to one-eighth to that for tubes.

PERSONAL MENTION.

William S. Bloomer has been appointed Chicago district manager of the Quaker City Rubber Co., Philadelphia, Pennsylvania.

R. W. Ashcroft, who recently resigned as advertising manager of the United States Rubber Co., New York City, a position he had held for the last four years, and previously advertising manager of the Canadian Consolidated Rubber Co., Limited, Montreal, has been appointed director of publicity of the Ames Holden McCready System in the latter city.

A. C. Frank, export manager of the Firestone Tire & Rubber Co., Akron, Ohio, recently returned to New York City after a three-months trip to England and the Continent. He reports that the industrial activity of Belgium is particularly noticeable and that that country is now rapidly placing its factories on a quantity production basis and rehabilitating the devastated districts.

Robert S. de Orrell, formerly with the Hartford Rubber Works Co. and the Lee Tire & Rubber Co., has been appointed superintendent of the Washington Tire & Rubber Co., East Sprague avenue, Spokane, Washington.

J. B. Cothran, who was recently appointed manager for the Globe Rubber Tire Manufacturing Co.'s New York district, is one of the most popular men in the tire business. His headquarters will be 1851 Broadway, New York City.

Fred B. Geary, who was succeeded by J. B. Cothran, has been advanced to the position of general factory representative.

Charles W. Wood, crude rubber broker, 149 Broadway, New York City, who was successfully operated on last month, is rapidly convalescing.

E. S. Benson, formerly of Detroit, Michigan, has been appointed manager of the New York City office of The Fisk Rubber Co., Chicopee Falls, Massachusetts, and assumed his new duties March 1. His headquarters are at 1725 Broadway.

E. B. Tozier has resigned as secretary and general manager of the Century Rubber Works, Chicago. He is now at 1307 Rector Building, Chicago.

Henry S. Kimball and W. H. Swift have been elected vice-presidents of Gaston, Williams & Wigmore, Inc., international merchants, 39 Broadway, New York City.

George H. Lincks, who has been in the employ of William H. Scheel, 159 Maiden Lane, New York City, for the past 31 years as chief of staff with full charge of the buying and selling, has resigned and will conduct a general chemical business under the name of George H. Lincks at 106 Wall Street, New York City.

Robert Allan, formerly manager of the London & Brazilian Bank at Pará, Brazil, is now with the American Mercantile Bank of Brazil, Inc., at Pará.

W. J. Harris and G. E. James, of the Avon India Rubber Co., Limited, Melksham, Wilts, England, were recently in the United States on the company's business.

F. O. Holbrook of the Isleworth Rubber Co., Limited, Isleworth, Middlesex, England, has been in the United States for several weeks in the interest of his company.

D. MacArthur is now in the United States on a business trip in the interest of the North British Rubber Co., Limited, Edinburgh, Scotland.

J. Alfred Corbiey has recently joined the sales force of Tyer Rubber Co., Andover, Massachusetts. Mr. Corbiey was formerly with the Gates Rubber Co., Denver, Colorado, and will cover the Middle Atlantic States.

AN INCREASED PRODUCTION CONVENTION.

Seeing in increased production a means of restoring normal business and price conditions, the Chamber of Commerce of the United States will make its eighth annual meeting, to be held at Atlantic City, New Jersey, April 27 to 29, 1920, an "Increased Production Convention."

The general subject of increased production has been divided up in the program for the convention into sub-subjects. The first to be taken up will be the government in relation to production. Under this heading will be considered anti-trust legislation and taxation, especially the subject of excess profits taxes, against which there has been general complaint. The second general subject to be taken up will be land and water transportation in relation to production. International finance and its relation to world production will be discussed from the point of view of both the financier and the business man.

One general session of the convention will be given over to agriculture in relation to production and another important general subject will be the relation of labor to production.

Besides the general sessions there will be held group meetings, divided as along the great division of industry. In these meetings the subject of increased production, as in the general meetings, will be the main topic discussed.

ANNUAL MEETING OF NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS.

The annual meeting of the National Association of Waste Material Dealers was held at the Hotel Astor, New York, March 15 to 17, 1920. The Scrap Rubber Division met on the 15th and chose as chairman for the ensuing year Nat E. Berzen, of the New York firm of the same name.

Aside from an examination into the conditions the scrap rubber and rubber reclaiming industry is facing, the meeting concerned itself with drafting two resolutions designed to expedite business. The first provided that interest be charged reclaimers on all overdue accounts, and it was voted that a copy of this resolution be sent to all members of the Reclaimers' Division of The Rubber Association of America, as well as to reclaimers outside of this body.

The second resolution provides that the railroads be asked to change the carload rating on scrap rubber shipments from fifth to sixth class. In the movement to bring this about the secretary was ordered to cooperate with the Reclaimers' Division of The Rubber Association of America, Inc.

EASTERN AND SOUTHERN NOTES.

By Our Regular Correspondent.

THE RUBBER TRADING CO., 9-15 Murray street, New York City, announces that after March 22 it will do business under the corporate name of Baird Rubber & Trading Co. The officers are: William T. Baird, president and treasurer; Robert B. Baird, chairman of board; Collier W. and Robert D. Baird, vice-presidents; William T. Baird, Jr., secretary.

The Morse Chain Co., Ithaca, New York, has opened a new office at 1402 Lexington Building, Baltimore, Maryland, in charge of E. R. Morse, manager, and one at 302 Harrison Building, Philadelphia, Pennsylvania, in charge of M. H. Rodd, manager.

The Madison Tire & Rubber Co., Inc., has purchased the building at 20 West 60th street, New York City, and is remodeling it for a show-room and executive offices which it will occupy after May 1.

The Roessler & Hasslacher Chemical Co. will remove on April 1 from 100 William street to more commodious quarters at 709-717 Sixth avenue, corner of 41st street, New York City. Mail should be addressed to postoffice box No. 119, Times Square Station.

MacArthur & White, Inc., crude rubber brokers, with offices at 150 Nassau St., New York City, and Guth-Otis Building, Akron, Ohio, is a recently organized concern, although the members are well known crude rubber men. William MacArthur, who was recently associated with Hardy & MacArthur, will be in charge of the New York office, assisted by C. J. Lockhorn. A. R. White, who was formerly with J. T. Johnstone & Co., will have charge of the Akron office, and be assisted by Stuart Brown.

Hummel & Robinson, New York City, exporters, importers, and manufacturers of chemicals for the rubber trade, have appointed W. R. Sturges their representative and agent in southern territory for the sale of dry colors and chemicals. Mr. Sturges has been with Reichard-Coulston, Inc., New York City, in the same line of business, for the last seven years.

The Bargain Tire Co., incorporated in New York in 1917, to repair tires, etc., at 200 West 111th street, has been dissolved under the laws of that state.

The world's largest manufacturer of lead pencils is the Eagle Pencil Co. of New York City. The products of the company include every variety of pencil known to the trade, as well as rubber erasers, fountain pens, penholders and a multiplicity of styles of steel pens for every requirement. In ordinary pencils alone the daily output amounts to ten gross, practically 1,500 each minute. The Blaisdell paper pencil company has recently been acquired by the Eagle company and this line added to the output. One of the many departments of the Eagle plant is that devoted to making rubber erasers in various forms and colors.

The Henderson Tire Export Co., Inc., has opened offices at 17 West 42nd street, New York City, in addition to its new factory at Columbus, Ohio. The officers are C. Bernard Schmolle, president; W. H. Queripel, vice-president and treasurer; C. O. Henderson, of the Henderson Tire & Rubber Co., vice-president, and P. A. Zizelman, secretary. They will construct the Henderson millimeter tire, with special reference to the foreign market.

Under the auspices of the State and City of New York, the Firestone film, "Careless America," was recently shown to more than 5,000 school children at the Capitol Theatre, New York City, as the opening wedge in a nation-wide "Safety First" campaign.

The film was made by the Universal Film Co. for Harvey S. Firestone, who is seeking to impress upon Youthful America the dangers of careless pedestrianism, and upon automobilists, the evils of reckless driving. It depicted distressing accidents and gave the A. B. C.'s (Always Be Careful) of "Safety First."

Laidlaw, Kelley & Co., Inc., 14 Platt street, New York City, importer, exporter, and manufacturers' agent, has acquired a 21-year leasehold on the seven-story and basement building at the southwest corner of Thompson and Grand streets, and will consolidate there its various departments now located in several downtown buildings.

The Century Rubber Stamp Works, Inc., 551 Pearl street, New York City, has been formed from the partnership started eight years ago by a number of men who had been in the rubber stamp business from 18 to 30 years. Harry Heine is president.

The National Aniline & Chemical Co., Inc., 21 Burling Slip, New York City, has elected the following directors: Orlando F. Weber, H. H. S. Handy, W. N. McIlravy, Dr. W. G. Beckers, L. C. Jones, C. S. Lutkins, Henry Wigglesworth, W. J. Matheson, T. M. Rianhard, Dr. R. C. Taggesell, and F. M. Peters. The number of directors has been reduced to twelve. The directors, in turn, have appointed the following officers: president, chairman of the board, and chairman of executive committee, O. F. Weber; vice-presidents, Dr. W. G. Beckers, J. W. Newlean; acting treasurer, William H. West; secretary, H. F. Atherton; assistant treasurers, H. S. Trott, T. S. Baines; assistant secretary, R. V. Mahon.

The Katzenbach & Bullock Co., Inc., 100 William street, New York City, has bought the six-story and basement building at 440 Washington street, into which the company plans to move about April 1. The first and second floors will be used for offices; the balance for storage, laboratory, testing rooms, etc.

The Rubber Industries Athletic League of New York City held its first annual entertainment and reception at the Central Opera House, 67th street and Lexington avenue, New York City, March 23, which included a vaudeville performance and a ball. More than fifteen rubber companies were represented in the large attendance.

The Rubber Products Co., Barberton, Ohio, has appointed H. P. Harding eastern district manager.

The Rubber Engineering Co., Akron, Ohio, has appointed W. S. Innes its representative, with offices at 72 Trinity Place, New York City.

The Sydeman Rubber Co. has moved from 225 Fourth avenue to 222 Fourth avenue, New York City.

The Eckrode Rubber Co., Inc., Newark, New Jersey, has appointed Harold L. Pettingell its eastern and southern district manager. He was formerly with the Ajax Rubber Co., Inc., New York City, as assistant manager for two years, and previous to that was special representative of the Lee Rubber & Tire Co. for four years.

The General Electric Co., Schenectady, New York, will build in that city a six-story addition to its plant, 54 by 219 feet, to cost approximately $400,000.

The plant of the former Kavanaugh Knitting Co., Waterford, New York, has been acquired by the Beaver Mills, North Adams, Massachusetts. The latter manufacture yarn and tire fabric and the new mill is being adapted for the manufacture of tire yarns and will produce fabric the latter half of this year.

The Achilles Rubber & Tire Co., Inc., Binghamton, New York, has added another floor to its former three-story factory, enlarged the vulcanizer room, erected a new one-story warehouse, 40 by 80 feet, and built a new structure, 60 by 100 feet, for the storing of rubber, washing and drying rubber, cement mixing, and spreading. A larger building for the manufacture of tires and tubes is to be built as soon as the weather permits, to cost $600,000. The present factory will then be used for the manu-

facture of rubber footwear. Harry J. Smith is president and A. W. Caney vice-president.

The Lehigh Tire & Rubber Co., Pottstown, Pennsylvania, has changed its name to the Vulcweld Tire & Rubber Co. J. A. Maney is secretary.

The London Rubber Co., Pittsburgh, Pennsylvania, has elected the following officers: A. L. London, president; C. M. London, vice-president; H. London, secretary and treasurer.

The Union Rubber and Asbestos Co., Warren, Pennsylvania, has been incorporated under the laws of New Jersey to manufacture, buy, and sell mechanical rubber goods and asbestos materials. Donald W. Mackie is president; J. M. Shear, vice-president; Harry M. Prill, treasurer; and Charles H. Swoger, secretary; directors—R. A. Mackie, J. E. Golden, Thomas Flynn, and E. G. Cottingham. The personnel includes men familiar with the rubber needs of the oil field industry.

The Corona Cord Tire Co., East Butler, Pennsylvania, has removed the machinery in the buildings which it purchased in September last on the 20-acre property near Butler, and has progressed with the installations of its own machinery to the point where it hopes to begin production of tubes in February and of cord tires in March, to which line it will confine its business. The officers are: Thomas Phillips, Jr., president; H. B. Callahan, vice-president; C. H. Miller, secretary-treasurer. The directors include, in addition to the foregoing, J. V. Ritts, Elias Ritts, B. D. Phillips, and A. C. Fisher.

The New Castle Rubber Co., New Castle, Pennsylvania, is greatly increasing its facilities for the manufacture of fabric and cord tires and inner tubes. Many changes are being made at the company's plant at Mahoningtown and modern equipment is being installed. A new executive office is under construction and will be ready for occupancy this spring. Over 1,200 tires per day are being manufactured at present.

The officers are F. A. Krusemark, president; H. G. Carpenter, vice-president; L. G. Funkhouser, general manager, and F. T. Hutson, secretary-treasurer.

The Kelley Tire and Rubber Co., Inc., 962 Chapel street, New Haven, Connecticut, is excavating for its plant to be built at West Haven, on the line of the New York, New Haven & Hartford railroad. It is expected that the office building will be completed in April. All machinery and equipment for building 500 "Kelley King of Kord" tires and 1,000 tubes daily has been purchased and orders are being taken for delivery on July 1.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, is building an addition to its plant, 158 by 83 feet, six stories high, which it expects to occupy within a month. The construction is brick with steel frame.

The McClaren Rubber Co., Charlotte, North Carolina, has appointed the McClaren Rubber Tire Co., 327 West 57th street, New York City, its distributer.

The Diamond Holfast Rubber Co., 33 Auburn avenue, Atlanta, Georgia, will build a rubber plant to cost approximately $1,000,000 and will increase its capital to $2,500,000. H. Diamond is president.

The Virginian Rubber Co., Charleston, West Virginia, is building and has about half completed its two-story brick and concrete factory building, 100 by 260 feet, and a power house 50 by 40 feet, has been almost finished. The total cost will be about $275,000, and the company will manufacture both cord and fabric tires. Operation about June 1 is expected. The officers are: A. A. Lilly, president; Houston G. Young, vice-president; W. D. Guyer, secretary and treasurer; E. P. Stroman, general manager and T. A. Conger, general superintendent, formerly with the Henderson Tire & Rubber Co., at Bucyrus, Ohio.

The Kentucky Tire & Rubber Association, Louisville, Kentucky, newly incorporated for the purpose of manufacturing "Blue Grass Kord" tires, has temporary executive offices at 502-503 Realty Building. The construction of the first unit of its factory will be started at an early date. This will be 60 by 400 feet, part two stories high, and will be located on the K. & I. railroad.

The officers of the new company are: H. P. Didriksen, president; W. R. White, executive vice-president; J. E. Peterson, secretary; directors, H. J. Huff, Perry Frantz, O. R. Peterman, A. D. Hite, and J. W. Cambron.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

TRENTON NOTES.

THE RECENT FRESHET in the streams of this section caused a serious loss to the Empire Rubber & Tire Corp., situated on the Assunpink creek and necessitated closing the plant for more than a week. The boiler rooms and lower floors of the works were flooded and generators, motors, etc., were badly damaged by water. When the plant was finally put into shape for operation a second freshet caused further damage and the works closed again. The loss from the two freshets will total many thousand dollars. Apart from stock and machinery damage the company has lost heavily in curtailed production. The tire department on the lower floor is where the water did the most damage. The Joseph Stokes Rubber Co. was also flooded, causing the works to close down at a loss of several thousand dollars. The Crescent Belting & Packing Co. also suffered a considerable loss. The Bergougnan Rubber Manufacturing Co. was closed down for a day because the employes were unable to reach their work, due to the blizzard stopping the trolley lines.

Mayor Frederick W. Donnelly plans to prevent the future flooding of the rubber plants along the shores of the Assunpink Creek by the building of a long retaining wall. A conference was held between the mayor and representatives of the Puritan Rubber Manufacturing Co., Empire Rubber & Tire Corp. and the Joseph Stokes Rubber Co. The proposed wall will contain 17,000 feet of material and will cost about $150,000. The expense will be borne equally between the rubber manufacturers and the city of Trenton. C. Edward Murray, Jr., second vice-president of the Empire Rubber & Tire Corp., was made a member of the committee in charge.

Everything in the rubber line from tires to small hose has been advanced in price by Trenton manufacturers during the past month and prices will remain up for some time. There had been a general advance along all lines. The increased rates are due chiefly to the higher cost of cotton fabric, which has trebled in price during the past year. Compounding ingredients have also advanced materially. While there had been an increase in the cost of labor during the year, the advanced prices of manufactured goods are principally due to the cost of raw materials.

The plant of the Nearpara Rubber Co., East Trenton, was destroyed by fire on March 17, causing a loss of several thousand dollars. Herman Rosenthal, the proprietor, announces that he will build a new plant. Considerable stock was burned. The building was of frame construction, 125 by 60 feet in size.

The winter home of George R. Cook, situated at Camden, South Carolina, was recently destroyed by fire, including all the household goods. The cause of the blaze is unknown and the loss is very heavy. Mr. Cook is president of the Acme Rubber Manufacturing Co., and the Hamilton Rubber Manufacturing Co., both of Trenton.

W. O. Rutherford, vice-president of The B. F. Goodrich Rubber Co., Akron, Ohio, was entertained recently at dinner at the Trenton Club by John S. Broughton, president of the United

& Globe Rubber Co., Trenton. A number of Trenton rubber manufacturers were present. Following the report Mr. Rutherford visited several of the Trenton rubber plants and the points of historic interest in old Trenton.

John A. Lambert, treasurer and general manager of the Acme Rubber Manufacturing Co., has been elected president of the Trenton Chamber of Commerce at its annual reorganization meeting. Mr. Lambert was first vice-president of the organization and also chairman of the manufacturers' bureau. He has for many years been deeply interested in the affairs of the Trenton Chamber of Commerce. His term of office is for three years.

John S. Broughton, president of the United & Globe Rubber Co., has offered three prizes of $5 each for the highest averages in the work in the mechanical drawing classes at the Trenton School of Industrial Art.

General C. Edward Murray, of the Empire Rubber & Tire Corp., and W. J. B. Stokes, of the Thermoid Rubber Co., have been appointed members of the committee to raise $35,000 for the Trenton Welfare Association.

The Whitehead Bros. Rubber Co., Trenton, has elected Samuel Cadwallader secretary and manager, succeeding the late Alfred Whitehead. Charles W. Appleget has been appointed sales manager for the same company.

MISCELLANEOUS NEW JERSEY NOTES.

James Deshler Wilmot, for the past three years superintendent of the United States Rubber Co.'s plant at New Brunswick, has been promoted to the position of production manager of the Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut. Mr. Wilmot was succeeded in New Brunswick by Seymour Hadaway, of New Rochelle, New York, who has had charge of the service department of the company's plants at New Haven, Connecticut. Mr. Wilmot has several times been promoted by the company, and has planned and carried forward many improvements for the benefit of the workers. The various clubs and recreational facilities at the New Brunswick plant were all planned by him and he has looked out for the welfare of the employes at all times. He planned and equipped the hospital where injured employes are treated and also inaugurated the citizenship school for foreign workers, and the athletic teams.

The Michelin Tire Co., Milltown, New Jersey, is planning shortly to erect fifty new frame cottages at Milltown for the use of the company's workmen. The houses will contain five rooms and bath, and will be erected on land owned by the company. More houses will be erected later.

The Stanwood Rubber Co., Inc., Elizabeth, New Jersey, which has executive offices at 9 East 40th street, New York City, is to build a new power plant, 75 by 84 feet, on a solid concrete and steel mattress. The first floor of the company's main building, which is about 150 feet from the power house, will be used for mill and calender room, while the second floor will be devoted to tire building and finishing, and the third floor will be used as a tire repairing room. The company is utilizing the former plant of the Hardman Rubber Corp. at New Brunswick, which it purchased some time ago, for the manufacture of its tubes.

Smith & Serrell, manufacturers of machinery couplings, have removed from the West street building, New York City, to 44 Central avenue, Newark, New Jersey.

The Driver-Harris Co., Harrison, New Jersey, has increased its capitalization to $3,000,000, divided equally between common and preferred stock. The company is building a three-story addition to its plant, 52 by 100 feet, and is planning to add to this a 100-foot extension of equal height. The upper floor will be used as the general office, the second floor for spooling and testing room, and the ground floor for shipping and cleaning departments.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

DURING the recent traffic tie-up in New England, due to the series of blizzards which twice put the railroads more or less completely out of commission for several days, rubber plants were seriously affected. For a time snow shoveling was the principal business of many a rubber mill operative in an attempt to keep sidings clear. And when the Boston Chamber of Commerce sent out a call for men to assist the railroads to clear their lines, rubber men were among those who responded. Trucks were found inadequate for local deliveries, and several companies, including the Monatiquat Rubber Works Co., South Braintree, resorted to horses and pungs.

On account of the embargoes on freight and express, the Boston Rubber Shoe Co. and the Converse Rubber Shoe Co. supplied their customers by parcel post shipments. It became almost a common sight to see the sidewalk in front of the Malden post-office blocked with several hundred cases of rubber footwear awaiting shipment. Several companies in the Boston district were perilously near a shut-down due to lack of coal, and the Panther Rubber Manufacturing Co., Stoughton, was actually closed for a few days. The Avon Sale Co., of Avon, tided itself over the period of fuel shortage by burning wood. The Revere Rubber Co., Chelsea, is installing an oil-burning system which it is believed has many advantages and will reduce the uncertainty of fuel supply to a minimum.

The eighteenth annual Boston Automobile Show under the auspices of the Boston Automobile Dealers' Association, Inc., was held from March 13 to 20 inclusive, and was in every respect the greatest ever held in this city. Mechanics Building proved inadequate and many of the exhibits were housed in the South Armory nearby in Irvington street for the benefit of the Y. D. Club. While it was essentially a show of motor vehicles, the exhibits of accessories were many and varied. Tires were never more in evidence, but for the most part displayed by local agents and distributers rather than the manufacturers. Giant cord tires for trucks were a conspicuous feature.

Among the exhibits of interest to the rubber trade were the following: Arrow Grip Manufacturing Co., non-skid devices; Bascon's Inc., Victor tires; Bigelow & Dowse Co., Franklin tubes; Budd Wheel Corp., Michelin steel disk wheel; Central Automobile Tire Co., tires and tubes; L. C. Chase & Co., top material; A. L. Cherry, Inc., Gordon tires and tubes; Cobb Electric Appliance Co., tube vulcanizers; Columbia Tire & Top Co.; Eastern Rubber Co., Magic Rubber Mend; Green & Swett Co., Amazon and Miller tires; Grow Tree Co., Grow tires; Holland System, Inc., Trading Corporation, Overman tires; Lambert Trublpruf Tire Co., Lambert Trublpruf tires; New England Savold Tire Co., rebuilt tires; Northwestern Chemical Co., cements, tire and rim paints; Perrine Co., Braender tires and tubes; Record Tire Sales Co., rebuilt tires; E. P. Sanderson Co., Viking tires and tubes; Sewell Cushion Wheel Co., Sewell cushion wheel; Story Rubber Corporation, Bonner tubes; Times Square Auto Co., Buckskin, McLean, Timesco and Triumph tires and Timesco and Triumph tubes; Wetmore-Savage Co., Auburn tires; Austin J. Wright, Coffield tire protector.

The Owen Tire Co., 177 Portland street, Boston, has secured the exclusive New England agency for the McClaren J. & D. tires manufactured by the McClaren Rubber Co., Charlotte, North Carolina, and is seeking local dealers throughout the territory.

Two days prior to the opening of the Boston automobile show the Michelin Tire Co. began holding its convention of New England salesmen at the Copley Square Hotel. At these daily conferences several officials from the home office were present, including J. A. Hines, assistant sales manager; J. J. Rooney,

credit manager, R. B. Bramwell, advertising manager, and W. L. Hogarty, Boston branch manager.

The Franklin Rubber Co., 134 Federal street, Boston, recently declared a regular annual dividend out of the earnings of 1919. At that time the corporation voted a dividend of like amount to be given to the employes April 1, based on their salaries for 1919. This new departure met with a gratifying response by the employes.

A new rest room for the girls in the Boston office of Everlastick, Inc., 52 Chauncy street, has recently been opened. It is attractively furnished and has electric stoves for warming food brought for luncheon.

At last automobile tires are among the articles being sold on the deferred payment plan. Farley & MacNeill, 107 Federal street, Boston, are offering Cleveland-Standard fabric and Tiger-Foot cord tires for a first payment down of 20 per cent of the list price and the balance in easy monthly installments covering a period of four to six months. These tires are made by the Standard Tire Co., Willoughby, Ohio, and carry guarantees of 6,000 and 10,000 miles, respectively.

The Greene & Daniels Co., Boston and Pawtucket, Rhode Island, which was incorporated under Massachusetts laws October 8, 1919, by articles of amendment filed December 1, 1919, changed its name to The Ninigret Mills. The authorized capital stock is $1,050,000, and the company has mills at Pawtucket and Westerly, Rhode Island. H. T. Dunn is president and H. G. Fisk, Chicopee Falls, Massachusetts, is treasurer and clerk. The principal office is in Pawtucket, Rhode Island, the company having incorporated in that state under the name of The Ninigret Mills Co., November 20, 1918. The company manufactures all kinds of textiles and yarns, including tire fabrics. Further information about the development of this organization appeared in our issue of February 1, 1920.

James E. Odell, crude rubber broker, 200 Devonshire street, Boston, who has undergone a series of hospital operations during the past four months, is on his feet again, and after two months in the South hopes to resume his former activities. Meanwhile, the business is being ably conducted by his son, James E. Odell, Jr.

Coincidentally with the celebration of its eleventh anniversary, the Monatiquot Rubber Works Co., of South Braintree, Massachusetts, announces the election of the following officers: James H. Stedman, president and treasurer; Merton A. Turner, vice-president and sales manager, and Benjamin Ayer, general factory manager.

Mr. Stedman is well known to the trade as the founder of this company and for his former prominence in the scrap rubber industry. He is still a young man despite many years of business activity.

Mr. Turner joined the company as a salesman at its inception and his success is evidenced by his election to the new office and the board of directors. He is one of the best known figures of the reclaimed rubber industry.

Mr. Ayer joined the organization in 1910 after his graduation from Dartmouth College, and advanced through the successive stages of foreman, production superintendent and factory superintendent to his present office. He is a keen student of labor and production conditions, and is the originator of methods which have signally increased the value of the company's recent successes.

The various teams of the Fisk Athletic Association of The Fisk Rubber Co., Chicopee Falls, Massachusetts, have always held high places in the rubber mill athletic activities of the country. And now comes the good word that the Red Tops on March 12 and 13 won the industrial championship of the United States in the American Industrial Athletic Association basketball tournament at Akron, Ohio

To take care of the increased demand for "Big Nine" tennis shoes, which has exceeded the production facilities of the Malden factory, the Converse Rubber Shoe Co. has opened a stitching department at Concord.

L. J. Waldron, who has been selling Vacuum Cup tires in this territory for five years, has been appointed sales manager for New England by the Pennsylvania Rubber Co., with headquarters at 683 Beacon street, Boston.

The Akron Tire & Rubber Co., 24 Columbus avenue, Boston, is perfecting plans for opening a chain of branch stores in leading New England cities.

The Ajax Rubber Co., Inc., 158 Brookline avenue, Boston, has secured a fleet of Maxwell cars for the use of its several salesmen who call on New England trade. E. D. Winans, general manager, claims that a salesman's efficiency is increased from 25 to 60 per cent by the use of an automobile.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE MANUFACTURERS of rubber goods of all description in Rhode Island are still struggling to overcome the setbacks experienced since the beginning of the year through weather conditions. Ever since before Christmas the railroads and highways have been hampered by the worst accumulation of snow and ice that has been known in this vicinity since 1857. Train and trolley service was badly crippled, all freight traffic suspended and all movements of coal crippled. In consequence practically every plant in the state was idle for longer or shorter periods.

Business activities continue brisk and with good orders on their books all of the concerns are preparing for a considerable increase in volume that will exceed anything ever experienced. With the advent of settled weather, alterations, expansions and improvements are being generally rumored. Not only are the regular rubber plants active but also numerous textile plants that are manufacturing tire fabrics. A number of additional textile concerns are preparing to equip their plants, or a portion thereof, for tire fabric production which is expected to become a very substantial branch of both the rubber and the textile industries of the future.

The plant of the Ninigret Mills Co., Westerly, Rhode Island, owned by The Fisk Rubber Co., wherein is manufactured cord tire fabric, is running 23 hours daily and has been for several weeks past. The company has secured a new site and work is to commence on a new mill as soon as the weather becomes settled. The officers of the concern have already been transferred from the offices of the Westerly Textile Co., on Main street, to the new plant of the Ninigret Co., on Canal street, where convenient and attractive quarters have been established.

The additions to the plant of the Revere Rubber Co., Providence, that have been in process during the winter are now practically completed and are being occupied by the concern, greatly increasing its capacity and facilities. The new buildings cost upwards of $200,000 and consist of two three-story concrete structures, one 150 by 50 feet, to be used as a chemical laboratory and the other, 120 by 100 feet, for manufacturing purposes. The latter also contains an employes' restaurant and recreation rooms such as have come to be regarded so favorably as essentials of contented economic community life. The combined floor space of both buildings amounts to 60,000 square feet and the latest types of machinery and laboratory apparatus are now being installed.

The new tire factory of the United States Rubber Co., in Providence, is to be called the "Colt Plant," in honor of Colonel Samuel P. Colt, chairman of the executive committee of that corporation. The factory is one of two units operated as the

Revere Rubber Co., and has heretofore been known as Revere Plant No. 2. It is planned that all of the truck tires, both solid and pneumatic, made by the United States Rubber Co., be manufactured at this plant, and to that end considerable new machinery and equipment are being installed.

During the recent freight embargo and bad condition of the roads the National India Rubber Co., Bristol, found the equipment of its batteries of boilers for oil burning especially efficacious. At present five boilers at the company's plant are "fired" by fuel oil and eleven by coal. But the company has arranged so that the latter will be equipped for oil burning in the near future.

The management of the National Co. continues to give much attention to the consideration of the welfare and social interests of the employes and already plans are under way for numerous athletic and out-door activities for recreation during the coming season. Recently a band was organized among the employes and this has been furnished with proper instruments and a competent band director engaged. William Ferrara has been elected bandmaster.

Work has been started on a one-story brick addition, 20 by 64 feet, at the plant of the American Wringer Co., on Social street, Woonsocket. It will cost about $5,000.

The Weybosset Vulcanizing Shop, 362 Weybosset street, Providence, is being conducted by Wilfred Ginsell, according to his statement filed at the city clerk's office.

Work is nearly completed on a two-story brick addition, 38 by 30 feet, to an office building on Fairmount street, Woonsocket, for the Woonsocket Rubber Co., to cost about $10,000.

The management of the Davol Rubber Co. announced that with the beginning of March a pay advance in the form of a bonus of 10 per cent for all employes who by promptness and attendance show interest in their work. This is to be paid at the end of each week, and represents the third general increase that has been made by this company during the past eight months.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

AKRON NOTES.

THE B. F. GOODRICH CO., Akron, maintains a body of trained men to guide visitors, and particularly those interested in the sale and manufacture of tires and rubber goods, through

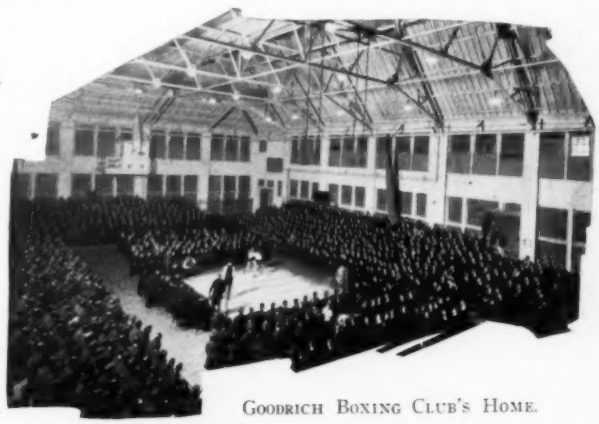
GOODRICH FACTORY GUIDES.

its factories, and to explain to them methods and processes in rubber manufacture. This service, which was suspended in part during the war, is in full force again.

The factories have been inspected by visitors and associations from all parts of the world, among them the Foreign Trade Commission, which made a tour of the United States.

The Goodrich post of the American Legion has been officially named L. H. Kneil Post No. 255, in memory of Corporal L. H. Kneil, 55 Company, Fifth Marines, Second Division, who was wounded in action on the Meuse November 11, 1918, and died the following day. He was a member of department No. 16 of the Goodrich organization.

At intervals of one month during the fall and winter season rubber workers of The B. F. Goodrich Co., Akron, assemble in their recreation hall to witness lively boxing exhibitions by fellow employes. The accompanying picture was snapped at a recent "smoker," which was attended by nearly 2,000 people. A special clubhouse and training quarters are provided for the pugilistic students. Simms, the boxing instructor, has developed dozens of fast amateur fighters who had never before donned padded gloves.



GOODRICH BOXING CLUB'S HOME.

Goodrich Recreation Hall is located in the heart of the plant and is equipped with up-to-date gymnasium apparatus, shower baths, lockers and the like. During noon hours an orchestra plays while employes dance. Moving-picture shows, lectures and social affairs are held at Recreation Hall.

BABCOX JOINS AKRON ADVERTISING AGENCY.

Edward S. Babcox, who was sales manager of the Rubber Products Co., Barberton, Ohio, has resigned that position to accept the vice-presidency and a directorship in The Akron Advertising Agency Co., Akron, Ohio.

EDWARD S. BABCOX.

For two terms Mr. Babcox served as vice-president of the Association of National Advertisers and he also was president of the Audit Bureau of Circulations.

Mr. Babcox's advertising experience dates back more than twelve years when he was a member of the advertising department of Yawman & Erbe, Rochester, New York, manufacturers of office supplies. From Yawman & Erbe he went to the Burroughs Adding Machine Co., Detroit, Michigan, as assistant advertising manager. A year or so later, Yawman & Erbe called him back to Rochester as advertising manager, and he remained there until 1913, when he took over the advertising managership of the Firestone Tire & Rubber Co. He served in this capacity six years, after which he accepted the sales managership of the Rubber Products Co.

C. P. Firestone has been elected temporary chairman of the Firestone American Legion Post, Akron.

The Star Rubber Co., Akron, has authorized an increase in capitalization from $1,200,000 to $4,000,000, of which $1,500,000 will be eight per cent preferred and the balance common stock.

The Lambert Tire & Rubber Co., Akron, has elected the following officers: Henry M. Lambert, president; Judge Arthur Langguth, first vice-president and chairman of board of directors; J. W. Coyle, second vice-president; Porter E. Ramsey, director in charge of production, and John Hausam, secretary-treasurer and director in charge of Akron factory.

The H. B. Bixler Co. has been organized at Akron, Ohio, to supply engineering service to manufacturers in supervising processes and testing raw materials and finished products as well as in erecting plants and installing equipment. Plans are completed for erecting a two-story building, 80 by 300 feet, in which a complete modern rubber factory will be installed where all necessary machinery and new processes may be tested on a commercial scale. It will include a chemical and physical laboratory.

Makers of rubber-working machinery will be able to develop their machines and to demonstrate them under operating conditions. Manufacturers of rubber goods may use the plant while their own are under construction, and inventors may find the equipment to develop their ideas. A temporary laboratory, 47 by 80 feet, has already been put up and is handling work. H. B. Bixler is manager of the mechanical and electrical division, M. L. Allord of process and production work, and H. C. Roller of the technical laboratories.

The India Tire & Rubber Co., Akron and Mogadore, Ohio, expects to double its production of tires this year. It is adding more space to the present plant and will soon break ground for its new factory building, to be completed before the end of the year.

The Rubber Engineering Co., Akron, has removed from 325 Ohio Building to 46 South Broadway. On account of increased business, it was necessary for the company to secure larger quarters in order to improve its service to its customers.

A team to play the game of lacrosse will be formed among employes of The Goodyear Tire & Rubber Co., Akron, this year. This game is played with a hard rubber ball and specially constructed racquets.

The Amazon Rubber Co., Akron, has elected the following officers for the ensuing year: President, Dr. E. E. Quirk; vice-president, Frank B. Burch; treasurer, Walter Herberich; secretary and assistant treasurer, George Hupp. The directors include Messrs. Quirk, Burch, and Hupp, besides Gus Burkhardt, Albert Kroehle, W. A. Boesche, M. D. Kuhlke, and J. A. Berke.

Managers and salesmen of the Amazon company held a convention in Akron March 15-17, concluding with a banquet at the Akron City Club. The speakers included Edward S. Babcox, the newly elected vice-president of The Akron Advertising Agency Co.

The Avalon Rubber Manufacturing Co., Akron, has increased its capitalization from $200,000 to $1,500,000, and elected the following officers: J. Fred Hower, president and general manager; L. K. Hower, vice-president and factory manager; C. A. Carlton, secretary; and C. E. Siegfried, treasurer. These, with W. S. Salisbury, George Landis, and I. W. Maibach, constitute the board of directors.

The company expects to have its new tire plant at Sterling, Ohio, in operation by June 1. The Barberton plant will continue to handle mechanical goods and reclaiming.

The Columbia Tire & Rubber Co., Columbiana, Ohio, has elected the following officers: G. W. Henne, president; W. G. Henne, vice-president and general manager; Baird Broomhall, secretary; W. F. Henne, treasurer; directors—W. B. Martin, F. M. Bushnell, L. C. Chase, E. O. Townsend, and J. C. Henne.

The company's plant at Mansfield, Ohio, is to be known as plant No. 1 and that at Columbiana as No. 2.

B. C. Wilson, formerly of the Martin V. Kelley Advertising Agency, Toledo, and the Miller Rubber Co. in Akron, has joined the Akron Advertising Co., Akron, Ohio.

C. A. Damen, of the sales force of L. H. Butcher Co., Inc., New York City and San Francisco, dealer in colors and chemicals for the rubber trade, has been assigned to the Akron office, succeeding George H. Jacobs, resigned.

MISCELLANEOUS OHIO NOTES.

J. W. Blaser has been elected treasurer and director of sales for The Rubber Products Co., Barberton, Ohio.

W. S. Dellett succeeds Edward S. Babcox, resigned, as sales manager of the same company.

The National Tire & Rubber Co., East Palestine, Ohio, has reorganized its financial plan and will issue preferred stock to the amount of $1,000,000 in addition to 75,000 shares of no-par common stock. The present capitalization is $1,000,000. The officers are: C. I. Merwin, president; S. L. Warner, vice-president and general manager; R. B. Taggart, treasurer, and C. W. Helman, secretary.

The W. F. Gammeter Co., Cadiz, Ohio, is planning to build a new factory, 80 by 240 feet, to take care of its increasing business, and a foundry for making semi-steel castings, in order to insure always having a supply of shell heads.

The Dayton Rubber Manufacturing Co., Dayton, Ohio, has increased its capital to $10,000,000 of 7 per cent cumulative preferred stock, par $100 per share, and 100,000 shares of common stock without par value. The additional working capital obtained from the underwriting of this stock, of which a considerable amount has already been secured, will be used in building a large addition to the present plant and for the installation of additional equipment. The new building will have approximately 100,000 square feet of floor space and will be all on one floor with a ceiling 30 feet high containing extensive skylights. This addition will be completed and machinery installed by July next.

The company will specialize in both cord and fabric pneumatic tires during 1920, in addition to its "Dayton Airless."

The officers and directors of the company are: John A. MacMillan, president; C. E. Heiser, vice-president; C. E. Hooven, secretary and treasurer; William R. Craven, Walter L. Kuhns, and A. O. Eberhart, directors.

F. N. Hammond has been appointed special representative of the sales department of The Portage Rubber Co., Barberton, Ohio.

The J. W. P. Tire Co., 952 Valley street, Dayton, Ohio, incorporated in July, 1919, built and sold its first tire in the latter part of the following September and has now ordered additional equipment for delivery within 60 days with which it hopes to be turning out 200 tires daily within six months.

The Reynolds Machine Co., Massillon, Ohio, will add a tire mold plant to its present equipment. No foundry will be erected before next year, but additional floor space will be provided for boring mills and other machinery, which have already been purchased to the extent of more than $50,000. One mill has already been installed and several more are expected for delivery May 15.

The officers of the company are: F. C. Snyder, president; E. H. Birney, vice-president, and O. F. Binford, secretary-treasurer. The company has increased its capital stock from $200,000 to $500,000 to provide for the above expansion.

The Knox Tire & Rubber Co., Mt. Vernon, Ohio, has begun work on its new factory, ground having been broken on January 3, with appropriate ceremonies. B. E. Frantz is president.

The Allsteel Ridewell Tire & Rubber Co., 513 Lindsey Building, Dayton, Ohio, has purchased a factory site of 34 acres on the Baltimore & Ohio railroad and the Miami river, and is having plans and specifications prepared for a three-story and basement factory with three wings. This will be built of structural steel with brick facing and have 125,000 square feet of floor space. The company will manufacture a patented cord tire to be called the "Artyr," besides inner tubes and battery jars.

A. HUETTER.

The president of the concern is A. Huetter who, in the summer of 1918, was elected vice-president and general manager of the Premier Rubber & Insulation Co., Dayton, previous to which he was for two years the head of the Bakelite department of the Dayton Engineering Laboratories Co.

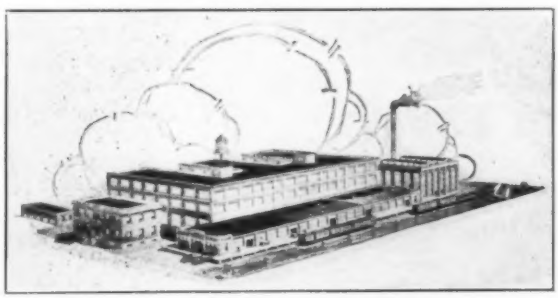
Innis, Speiden & Co., Inc., New York City, announce the removal of its branch in Cleveland, Ohio, from 641 Long avenue to 1913 Orange avenue on April 1, where a full line of chemicals for the rubber trade will be carried.

THE ERIE TIRE & RUBBER CO.

An enviable record of accomplishments is that made by The Erie Tire & Rubber Co., Sandusky, Ohio. This company was organized at Cleveland, Ohio, in March, 1919. Within six months their securities were fully sold, and the following November the factory began the manufacture of cord tires and inner tubes.

The officers of the company are: Peter F. Wills, president and general manager; H. H. Forrest, vice-president and general superintendent; F. W. Hildebrand, secretary, and H. M. Learned, sales manager.

The company's plant at Sandusky is being enlarged by the addition of new buildings now under construction, which will increase the capacity of the plant to 1,500 cord tires a day. The



PLANT OF THE ERIE TIRE & RUBBER CO.

manufacturing policy of the company is to concentrate output exclusively on cord tires and tubes.

Appreciating that the realization of the plan to produce a strictly first-class product depends, in large degree, on able and efficient workmen, every effort is being made by the management to enhance that efficiency in ways that will contribute to the contentment of the operating force. The welfare activities are planned on the latest ideas and include a medical department under the direction of a physician, recreation grounds and a cafeteria. Special attention has been given to housing conditions, and several modern homes have been erected near the factory.

THROUGH AUGUST, 1919, TRINIDAD AND TOBAGO HAD SHIPPED 24,673 pounds of rubber, as compared with 18,809 pounds for the same period in 1918, 12,102 pounds in 1917 and 5,063 pounds in 1916.

DIRECTOR OF GOODRICH MECHANICAL SALES.

CLARENCE EDWARDS COOK, director general of mechanical sales for The B. F. Goodrich Co., Akron, Ohio, is well fitted for this important position by long and varied experience with the Goodrich organization. Mr. Cook was born in Cleveland, Ohio, and received his education in the grammar and high schools of that city, graduating in 1895. That year he entered the freight office of the Lake Shore & Michigan Southern Railway as a clerk, where he remained four years. Attracted by the rubber industry, he was in the employ of The B. F. Goodrich Co. for two years, but returned to the railroad in 1901 for another year. In 1902 he went to the People's Hard Rubber Co., and the following year took a position as traveling salesman in Ohio, Indiana and Kentucky for the Gutta Percha & Rubber Manufacturing Co., New York City. In 1905 he accepted a traveling position with The B. F. Goodrich Co., and five years later found him Pacific Coast manager. From this position in 1917 he was promoted to the post of director of branch operations in charge of 120 branches and stores selling Goodrich products throughout the country. On June 1, 1919, he was again advanced to director of mechanical sales, which position he now holds.

C. E. COOK.

Mr. Cook has an extensive acquaintance in the rubber trade and elsewhere. He is a thirty-second degree Mason and Shriner.

MID-WESTERN NOTES.

By Our Regular Correspondent.

THE KOKOMO RUBBER CO., Kokomo, Indiana, is one of the oldest industrial organizations of its kind. It made the first pneumatic automobile tires in the United States, and since the days of the high-wheeled bicycle it has supplied the bicycle trade with tires. The original pneumatic automobile tires are still part of the equipment of the Elwood Haynes' first American automobile, a famous industrial landmark on exhibit at the Smithsonian Institute, Washington, D. C.

J. W. Culver has been appointed manager of the central district offices and warehouse of The Federal Rubber Co. of Illinois, Cudahy, Wisconsin, with headquarters at 1434 Michigan avenue, Chicago, Illinois. He was formerly manager of the company's mechanical rubber goods department.

E. T. Fisher has been appointed manager of the Denver, Colorado, branch of The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio.

C. A. Jessup, formerly manager of the St. Louis, Missouri, branch of the Kelly-Springfield Tire Co., New York City, has been appointed manager of the company's branch at 294 Jefferson avenue, Detroit, Michigan.

A new building for the Detroit branch is being erected at the corner of Cass avenue and Antoinette street.

The Yarnall-Waring Co., Philadelphia, Pennsylvania, manufacturer of "Yarway" power plant devices, has opened a branch office in the Builders and Traders' Exchange, Penobscot Building, Detroit, Michigan, in charge of Walter G. Heacock, branch manager.

The Portage Rubber Co., Barberton, Ohio, has opened a branch at 450 Jackson street, Milwaukee, Wisconsin, to take care of increasing business in that territory. P. S. Manley has been appointed branch manager and six salesmen will work from this center.

The Mason Tire & Rubber Co. of New York, Inc., 450 Jackson street, Milwaukee, Wisconsin, has been granted a Wisconsin

licence to do business as a foreign corporation. This is a branch of the selling organization of The Mason Tire & Rubber Co., Kent, Ohio.

Packard Tire Stores, Inc., 436 Milwaukee street, Milwaukee, Wisconsin, has increased its capital stock from $50,000 to $100,000. It distributes McClaren tires, J. & D. brand, in Iowa, Wisconsin, and the upper peninsula of Michigan. It has one branch in Des Moines, Iowa. H. A. Packard is president.

The Tomah Rubber Corp., 176-182 Sixteenth street, Milwaukee, Wisconsin, has been organized as a preliminary company to develop a number of patents in tires and tubes, including a patent valve and a puncture-proof inner tire. The officers are: Leo Hofmeister, president and treasurer; Ray W. Slater, secretary; John R. Matthews, vice-president.

If this development work proves satisfactory, a new company called Allenton Rubber Mills will be organized and a three-story factory office, 96 by 96 feet, will be built at Allenton, Wisconsin, as soon as weather conditions permit. A site has already been purchased.

The Tomah Rubber Corp. is associated with the North Star Oil & Rubber Corp., 176 Sixteenth street, Milwaukee, Wisconsin, as are also the Sheboygan Oil & Rubber Corp., Sheboygan, Wisconsin, the Fond du Lac Oil & Rubber Corp., Fond du Lac, Wisconsin, and the Multi-Products Co., Milwaukee, Wisconsin.

The Otto Tire & Rubber Co., 208-210 Upper Fifth street, Evansville, Indiana, incorporated in December, 1919, has purchased several pieces of property on Sycamore street in order to remodel its vulcanizing department and enlarge its Gates half-sole and Maxotire department. It expects to be in full operation by May 1, confining its business to tires and accessories. H. J. Otto is president and general manager, G. H. Bippus treasurer and A. J. Hoffman secretary.

The Kansas City Tire & Rubber Corp., formerly of Kansas City, Missouri, was placed in the hands of receivers on May 24, 1919, on application of certain stockholders for the protection of their interests. In July, P. E. Werner, who organized the company, was appointed manager by the receivers to straighten out the affairs of the concern. About the middle of October the court granted permission to operate the factory at Kansas City, Kansas, manufacturing fabric tires. In December certain creditor banks applied for the sale of the property, but were refused by the judge at a hearing held on December 29. It is probable that operation will be continued by the receivers until a satisfactory reorganization can be accomplished. Meanwhile the factory at Kansas City, Kansas, is being operated day and night with two shifts of workmen, each shift working 8½ hours. Mail should be addressed to the general office at Fourth and Central streets, Kansas City, Kansas. The company owns a second factory at Chester, West Virginia, which has been rented.

The Two-in-One Tire Co., 418-420 Bridge street, N. W., Grand Rapids, Michigan, which operated its reliner business under the name of the National Tire & Reliner Co., has increased its capitalization to $675,000 and changed its name to First National Tire & Reliner Co. The officers are: R. Roden, president; I. Warsaw, secretary; A. J. Gorney, treasurer and general manager.

The Council Rubber & Tire Co., Broadway and Main street, Council Bluffs, Iowa, incorporated last December, will build a factory for the manufacture of mechanical rubber goods, pneumatic and solid tires and inner tubes, and the reclaiming of rubber goods. W. R. Blowers, president of the company, has been in the rubber business over 30 years. The other officers include F. A. Nabb, vice-president; William E. Hyland, secretary, and Elmer E. Weberg, treasurer. The authorized capital of the concern is $1,500,000.

The Madison Tire & Rubber Co., Inc., New York City and Buffalo, New York, has opened a branch for the sale of its tires and tubes at 1606 South Michigan avenue, Chicago, Illinois, in charge of John H. Jones, Jr., and John M. Erickson.

The Burlock Rubber Clothing Co., 297 Third street, Milwaukee, Wisconsin, recently incorporated at $250,000, for the purpose of rubberizing and manufacturing leatherette and suede coats as well as a general line of raincoats, is building a rubberizing plant at Wausau, Wisconsin, which will later be the company's headquarters.

The Quality Tire & Rubber Co., Anderson, Indiana, and the Long-Wear Rubber Co., Elyria, Ohio, which has changed its name to The Long-Wear Tire & Rubber Co., have arranged to consolidate under the last name. The capital of the Quality company was $750,000 and of the Long-Wear company, $500,000. The new concern is capitalized at $5,000,000, divided into $700,000 preferred and balance in common stock. General offices will be maintained at Anderson, Indiana. Frank W. O'Brien is general manager. The Elyria plant will be enlarged later by an addition for the building of cord tires.

The International India Rubber Corp., South Bend, Indiana, has increased its capital stock from $1,000,000 to $2,500,000 to take care of its increased business. The present plant is operating both day and night in the effort to increase production until the new plant additions under construction can be put into operation.

The company has promoted its Pacific Coast representative, C. H. Mayer, to the position of assistant sales manager at the South Bend office.

The Standard Four Tire Co., Keokuk, Iowa, maintains a branch at 245 North Penn street, Indianapolis, Indiana.

The Jostam Manufacturing Co., 1036 Montana street, Chicago, Illinois, has made a special arrangement with The B. F. Goodrich Rubber Co., Akron, Ohio, whereby it becomes the distributer of the Goodrich recoil pads known as "Akron," "Norka," and "H. R. B." The first two are slip-on pads and the last is the silver pattern pad.

The Brunswick-Balke-Collender Co., Chicago, Illinois, has contracted for additional equipment and improved processes to be used in its new factory at Muskegon, Michigan, which adds at least $250,000 to the estimated $1,500,000. Housing accommodations for employes are being made as well.

The Pan-American Rubber Co., Watertown, Wisconsin, has elected the following officers and directors: Max G. Kusel, president; Charles Christman, vice-president; O. C. Wertheimer, secretary and treasurer; directors—the above together with A. F. Mayer and Frederick Saxmann.

The Dryden Rubber Co., 1014 South Kildare avenue, Chicago, Illinois, is building a new power plant and a new factory building 180 by 70 feet, two stories, for the exclusive manufacture of inner tubes. Both are of brick, concrete, and steel construction. The company reports sales greatly increased over the corresponding period of last year.

The Latex Tire & Rubber Co., Fond du Lac, Wisconsin, organized last May, has already put up the first unit of its factory, a two-story building, 50 feet by 150, with a capacity of 300 tires and 700 tubes a day, on the shores of Lake Winnebago, with good railroad connections. The company expects to be manufacturing tires and tubes within a few weeks. It will specialize in the Latex Non-Skid and Ribbed Tread tires and the Lambright cushion tire.

The officers of the company are: F. S. Dannenberg, president and general manager; J. T. Brofka, vice-president; J. T. Jones, secretary and sales manager; Orlando J. Koll, treasurer. Grant Lambright, for many years with The B. F. Goodrich Co., is general superintendent, and D. J. T. Kennedy is assistant superintendent in charge of publicity.

Rub-Tex Products, Inc., 454 Lemcke Annex, Indianapolis, Indiana, has recently been incorporated to make mechanical rubber goods from used and discarded automobile tires; also

rubber heels and fiber soles. Edwin H. Emrick is president and Scott C. Legge treasurer.

WESTERN MANAGER, GLOBE RUBBER TIRE MANUFACTURING CO.

R. B. Tracy.

Another seasoned executive was added to the staff of the Globe Rubber Tire Manufacturing Co., when R. B. Tracy recently assumed the duties of western manager, following more than fifteen years' association with the Michelin Tire Co.

Mr. Tracy's connection with the tire industry dates back about twenty years when he became connected with the Pope Manufacturing Co., Hartford, Connecticut. Upon joining the Michelin forces he started as manager of the Cleveland, Ohio, branch. Four years later he was promoted to management of the Chicago branch, which included supervision over the Minneapolis, St. Louis, Des Moines, Cleveland and Kansas City branches. In 1915 he was appointed factory representative, with all branches west of Philadelphia under his direction.

Mr. Tracy has an extensive acquaintance and many friends throughout the Middle West that should prove valuable assets in promoting the sale of Globe tires in that territory.

MID-WEST RUBBER MANUFACTURERS' ASSOCIATION.

The March meeting of the Mid-West Rubber Manufacturers' Association was held in Chicago, Illinois, March 9, at the Chicago Athletic Association, and was the most largely attended of any of these monthly meetings. Fifty-one members were present and the opinion was voiced by all that the gatherings of the Association were of increasing interest and most beneficial.

John T. Christie, president of the Association, called on a number of the members to express themselves regarding trade conditions for the benefit of those present.

An incident of the meeting that awakened enthusiasm was the presentation of a handsome silver loving cup to John W. Maguire, vice-president and general manager of The Portage Rubber Co., Barberton, Ohio, and the first president of the Mid-West Association, in recognition of his services in organizing and guiding the Association through its first year.

Presented to John W. Maguire by Members of the Mid-West Rubber Manufacturers' Association, February 11, 1920.

It had been intended to present the cup at the February meeting, but Mr. Maguire had been unable to be present.

The presentation speech was made by Fred J. Horn, Akron representative of Fred Stern & Co., New York City, who spoke of the great need of a center for rubber activities in the mid-western states and the satisfactory manner in which Mr. Maguire had succeeded in anticipating that necessity.

Mr. Maguire responded to what had come as a total surprise to him, with words of thanks to the donors. He told of how a few of the manufacturers had organized in January, 1919, the association which now gave promise of a successful career, at the same time disclaiming any special credit for himself. His efforts, assisted by those associated with him, were to meet a situation that confronted them. Nevertheless, he was more than grateful to his friends who had thought his efforts worthy of this handsome testimonial.

During the meeting it was decided to create the office of second vice-president and the dual office of general manager and secretary. W. W. Wuchter, president of the Nebraska Tire & Rubber Co., who had been serving as secretary, was elected second vice-president, and H. S. Vorhis general manager and secretary.

The following new members were elected:

REGULAR MEMBERS.

Black Hawk Tire & Rubber Co., Des Moines, Iowa.
Century Rubber Works, Chicago, Illinois.
Johnstone Tire & Rubber Co., La Porte, Indiana.
The Overland Tire & Rubber Co., Omaha, Nebraska.
Surety Tire & Rubber Co., St. Louis, Missouri.

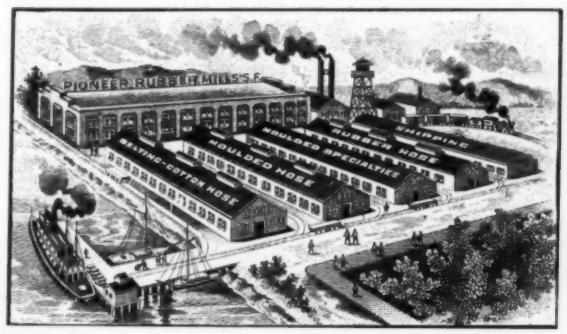
ASSOCIATED MEMBERS.

Duffy & Sears, New York City.
W. E. Byles, New York City.
Gove & French, New York City.
Bennett Day & Co., New York City.
The Rex-Hide Manufacturing Co., East Brady, Pennsylvania.

THE RUBBER TRADE ON THE PACIFIC COAST.

A PIONEER CALIFORNIA RUBBER FACTORY.

The Pioneer Rubber Mills, the name assumed by the Bowers Rubber Works, is greatly increasing its plant at Pittsburg in Contra Costa County, California. First started by W. F. Bowers forty years ago as the Pacific Coast branch of the Gutta



The Pioneer Rubber Mills, Pittsburg, California.

Percha & Rubber Manufacturing Co., as W. F. Bowers & Co., then as the Bowers Rubber Co. and the Bowers Rubber Works, it has taken a leading part in developing the rubber industry of the Pacific coast. It was the first company to import crude rubber directly into California and still keeps up the practice by drawing the raw material from the rubber plantations of the East Indies straight to its wharves at Pittsburg.

The plant covers about twenty acres of ground and a good sized town near it houses its large working forces. The company devotes its attention to mechanical rubber goods such as "Skookum" piston rod packing, "Copper Queen" rubber transmission belting, "Sunset" elevator and conveyor belting, "Owl" pneumatic hose and "Victor" fire hose.

All compounding, mixing, and working up of the crude rubber are done at the Pittsburg plant. There the company is now building for the reclaiming plant a two-story reinforced concrete building, covering 50 feet by 115. It plans to increase and expand its mechanical rubber capacity to more than double its present capacity, being driven to this by the fact that for three

years past the plant has been operating to full capacity, twenty-four hours a day, in the effort to meet the growing demand, domestic and foreign, for the company's wares.

The fabric used by the Pioneer Rubber Mills is made from California long-staple cotton, grown in the Imperial valley and ginned and spun in California. Almost all of the cotton duck used is woven on the company's own looms.

LOS ANGELES NOTES.

W. A. Messick, Los Angeles, has applied for a patent on a pneumatic rubber cushion for the top of crutches; also for one on a similar cushion for butt ends of rifles and shotguns.[1]

Harry H. Anderson, Los Angeles, who, though still in his early twenties, has attained prominence in the tire industry, has been made sales manager for Hess & Hackett, distributers of Oldfield tires.

Frank R. Carroll, former Los Angeles branch manager and later district manager of The B. F. Goodrich Rubber Co., has been appointed vice-chairman of the board of directors of the Yokohama Rubber Co., Limited, the Japanese subsidiary of the Goodrich company.

In the financing of the new Coast Tire & Rubber Companies Securities, a $1,000,000 California corporation, an inducement is offered prospective stockholders of 15 per cent discount on tires and tubes, besides 8 per cent dividend on their investment. C. L. Stackhouse, 327 Douglas Building, Los Angeles, is district manager.

Charles W. Seiberling, brother of Frank A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, was recently in Los Angeles with the company's mechanical engineer, W. C. State, and will plan to establish at the company's plant now being built in Los Angeles a recreation department that may even surpass that strong feature of the parent works in Ohio.

The Huntington Rubber Co., Los Angeles, has installed equipment for salvaging not only solid tires for trucks, but also giant pneumatics up to ten inches, such as are used on the heavy passenger stages and the freight motor cars on various routes between Seattle and San Diego. Up to recently the tire wastage on stage lines meant a serious loss, but as means have been found to restore old tires to almost maximum efficiency at about a third the cost of new ones, the transportation companies through this saving are now in a better position to offset the general rise in the cost of labor and materials.

Giant pneumatic tires are gradually supplanting heavy solid tires on motor stages that run between San Diego and San Francisco, California. The fine roads and the temperate climate are, of course, favoring factors for big pneumatics. Fully 500 cars, carrying on an average 10,000 people, leave the Union Stage Terminal in Los Angeles daily, and the extension of the stage transportation service as far north as the Canadian border is contemplated.

John F. Scanlon, advertising manager of the United States Compression Inner Tube Co., Tulsa, Oklahoma, was given a dinner recently by his Los Angeles newspaper friends at the Hotel Alexandria.

Sufficient headway has been made in the construction of the Goodyear Tire & Rubber Co. plant in Los Angeles, to warrant the projectors in saying that the factory, which will employ 10,000 workers at full capacity, will start manufacturing by June 1.

A new building is about to be erected by the J. B. Wood Tire & Rubber Co. at Third street and Central avenue, Los Angeles, as a distributing station for Hewitt tires, tubes, and mechanical rubber goods, the sale of which the Wood concern controls in Southern California, Arizona, and Western Texas.

The Los Angeles Horseshoe Tire Co., of which Charles Daley is manager, and which was recently appointed by the Pacific Rubber Co. as general Los Angeles distributer of Horseshoe tires and tubes, has been obliged, through increase in business, to move into larger quarters at 1037 South Figuerra street.

Dr. P. J. S. Cramer, of Amsterdam, Holland, the eminent authority on rubber botany, has been touring in the United States. He gave two lectures recently in Los Angeles and it is likely he will speak at several American universities before returning to Europe.

The Pacific Coast branch of the Standard Four Tire Co., Keokuk, Iowa, is at 342 West Pico street, Los Angeles.

SAN FRANCISCO NOTES.

The Michelin Tire Co. of California, 1644 Pine street, San Francisco, has completed plans and specifications for its new warehouse on 12th street between Mission and Howard. The new building will be 120 by 100 feet, and have a private spur track, which is now under construction. In addition to providing storage space for the new Michelin disk wheel, which is just being placed on the market, there will be included in the structure a conference room and separate lunch rooms for men and women employes. The San Francisco organization is a subsidiary of the Michelin Tire Co., Milltown, New Jersey.

Weinstock-Nichols Co., San Francisco, one of the largest distributers of motor car accessories in California, has been appointed by the Hewitt Rubber Co. as distributers for Hewitt tires in the northern section of the state. This concern, which has branches in the leading cities of California, will distribute Hewitt tires exclusively.

CANADIAN DUNLOP COMPANY BUILDING NEW TIRE PLANT.

The Dunlop Tire & Rubber Goods Co., Limited, of Canada, with headquarters in Toronto and branches in fourteen other cities and towns in Canada, is building and equipping a new factory in Toronto for which $1,500,000 has been appropriated. The building, here represented, is being rushed to completion; it is 400 feet long, 80 feet wide, with four stories and basement. It will be devoted especially to the manufacture of Dunlop cord tires.

NEW TIRE PLANT OF CANADIAN DUNLOP IN TORONTO.

The expansion is part of the aggressive campaign started by the Dunlop Rubber Co., Limited, of England, which besides its close connection with the Dunlop companies in France, Italy, Japan and Australia has recently started Dunlop America Limited in the United States. The Canadian company, which shares in the formulas, processes, methods and investigations of the British and other Dunlop companies, announces that it will cooperate with and will be closely connected with the United States company.

[1] The use of rubber in recoil pads is by no means new. Those on the market are as a rule solid rubber or contain sponge rubber for extra resilience. Nor is the pneumatic pad a novelty. In THE INDIA RUBBER WORLD for March 10, 1898, page 163, is a description and illustration of "Winters' Pneumatic Recoil Pad," which was manufactured by J. R. Winters, Clinton, Missouri.

Activities of The Rubber Association of America.

ASSOCIATION MEETINGS.

THE REGULAR MONTHLY MEETINGS of the Executive Committee, Mechanical Rubber Goods Manufacturers' Division, and the Executive Committee of the Tire Manufacturers' Division were omitted in March. The Executive Industrial Relations Committee met on March 12 and 13 and gave its attention to matters of general interest to rubber manufacturers. A report of the Committee's activities at this session was distributed to members of the Association through the medium of several communications dealing with the specific subjects.

REDUCTION IN CARLOAD FREIGHT RATES ON TIRES IN SOUTH.

In a recent decision of the Interstate Commerce Commission upon complaint as to the ratings applying on tires and tubes from points north of the Ohio and Potomac Rivers and west of the Mississippi River to southern points, the Commission directed that ratings be established to become effective on June 2, 1920, which shall provide third class rates, minimum carload weight of twenty thousand pounds on pneumatic tires in straight carloads, and third class minimum carload weight thirty thousand pounds on solid tires in straight carloads, mounted or unmounted, and on mixed carload shipments of pneumatic and solid tires and tubes third class rates, minimum carload weight thirty thousand pounds.

Heretofore, carload rates have not been in effect on shipments of tires and tubes to southern points and this reduction in the rates will result in a great saving in transportation charges on carload shipments to southern territory.

HEARINGS BEFORE THE INTERSTATE COMMERCE COMMISSION WITH RESPECT TO THE TRANSPORTATION ACT OF 1920.

The Interstate Commerce Commission held hearings in Washington on March 22 to 24, inclusive, at which proposals of the carriers, railroad security owners and the shipping public were received with a view to assisting the Commission in deciding the matter in which that feature of the Transportation Act of 1920 relating to the grouping of the carriers for rate-making purposes and the basis upon which the 5½ per cent guaranty return on the aggregate value of the railway properties shall be determined.

In view of the importance of this question, the settlement of which will determine the increase in transportation charges that will be necessary to furnish the carriers with sufficient revenue to conduct their business properly for the two years following September 1, 1920, the Traffic Department of The Rubber Association was represented at these hearings for the purpose of keeping in close touch with the situation.

Based upon the representations made to the Commission, it is felt that that body will decide that for present purposes the investment account of the carriers will be used for the basis for figuring the 5½ per cent return, and that the three existing freight classification territories will be used for grouping the carriers for rate-making purposes. The investment account will probably be subject to such corrections as the Commission may consider necessary.

UNSOUND NATIONAL ORGANIZATION SCHEMES.

NEW YORK, March 16, 1920.

To firm and affiliated members:

In discussing the work of the Industrial Relations Committee, it is found that practically every member of the committee has had numerous representatives of national organizations solicit their companies for financial support, and endorsement of various schemes. Many such propositions, although their objects may be laudable, do not have the organization or practical executives to carry on the work successfully. Many others do not have the merit of being sound, although a superficial examination might lead one to believe that they are worthy of support.

The committee believes that they can render a service to the members of the Rubber Association by investigating such organizations, and giving the members the benefit of their views on such matters. Therefore, if at any time, member companies desire to secure information in regard to any such organizations, if they will communicate with the general manager of the Rubber Association he will refer it to the Industrial Relations Committee for a report, and the committee will give their views on the matter.

Along this line, at the present time, a man named Albert St. Peter, from Pittsburgh, is endeavoring to build up a national organization for carrying on Americanization work. The committee has investigated this organization, and emphatically disapproves of the plan. The name of this organization is the National Institute for Americanization and Education. The committee believes that an organization such as this cannot carry on this work efficiently and they further believe that Mr. St. Peter himself has not demonstrated that he has executive ability to put through any such comprehensive plan, judging by his record in similar propositions with which he has been identified recently.

A. L. VILES, General Manager.

INDUSTRIAL RELATIONS.

NEW YORK, March 16, 1920.

To firm and affiliated members:

The Industrial Relations Committee wishes to call the attention of members to the bill recently enacted by the Kansas Legislature, for the establishment of Industrial Courts. A similar bill is now pending in the Legislature of the State of New Jersey, the number being Senate Bill 281.

The Kansas Industrial Relations Court law would seem to be, in the opinion of your committee, a justifiable experiment. Its successful working out can only be determined when proven by the test of time.

Your committee also wishes to impress on every member the importance of becoming thoroughly familiar with the report of the President's Second National Industrial Conference, which is now in the hands of the printer, and will be published within a few days. The Rubber Association will try to furnish each firm member with a copy of this report, as soon as it can be obtained from the printer; also copies of the Kansas and New Jersey bills.

The President's Industrial Conference, in all probability, will recommend the establishment of regional courts, and a national tribunal for the handling of all industrial disputes.

Your committee believes that there are some phases of this plan which should be given very serious consideration, since this is such a radical departure from present methods. Although some tribunals and courts may seem to offer a solution, theoretically, it would seem that there might be a possibility of such machinery creating more industrial disputes than we now have. Labor organizations would have everything to gain and nothing to lose, by getting a dispute before such a court, and once the machinery is established, there would be a great temptation on the part of certain people to use it. Further experiences show that the type of individual selected to serve in such positions is not the type who understands business or industrial problems, and in most cases people are selected because of their political affiliations rather than their practical knowledge of matters which come before them.

Your committee will discuss at its next meeting the report as a whole, and will furnish to member companies an expression of its opinion.

A. L. VILES, General Manager.

INDUSTRIAL RELATIONS—EMPLOYMENT.

NEW YORK, March 16, 1920.

To firm and affiliated members:

Replies to the letter of your committee on industrial relations, dated February 18, 1920, have been very gratifying. More than a hundred and twenty-five manufacturing members, large and small, have designated an executive or a specialist within their organization to supervise the work of industrial relations, and additional replies are being received daily.

It is the aim of your industrial relations committee to serve you intelligently whether your plant is large or small. In order to make the rubber industry foremost in industrial relations it is necessary that the members adopt a sound general policy which will fit local conditions.

As is well known, many of the larger plants in the rubber industry have industrial relations departments well established. While it is hoped that all plants can profit from the service offered, the committee, in outlining labor policies which have proved successful, has decided to begin at the beginning and proceed along practical lines as though each plant were just starting the study of industrial relations.

Assuming that a manufacturer has appointed an executive or specialist to supervise industrial relations work, experience indicates the next step to be the problem of employment.

Experience has shown that in any plant employing one hundred or more persons some one should be appointed on part time for smaller plants or full time for larger plants to specialize on the employment problem. He should report to the executive or specialist responsible for industrial relations. His duties should consist of supervision of employment, keeping records, hearing of all grievances, investigation of all discharges, care of all transferring and the study of causes of and remedies for labor turnover.

It is a mistake to place a mere clerk in such a position. A high-grade man with a naturally pleasant personality, good judgment, and plenty of back-bone should be appointed. Hiring and discharging by individual foremen are eliminated when the employment manager is introduced, and therefore diplomacy, good judgment and back-bone are needed in the employment manager.

The employment division must have a thorough knowledge of the company's needs for help, of the sources of supply and of approved methods of selection and placement so that each employe's experience and ability will be best utilized; should give the new employe general information as to shop regulations and as to the company's industrial policies, and should see that the employe receives, through the proper channels, such instruction as is needed to enable him to become familiar with his duties. The division should thereafter maintain an interest in the progress of the employe.

A great deal more might be written on the subject of employment. Your committee feels, however, that it is advisable for each plant to build up its own employment policies in accordance with local conditions. Your committee can make available to you plans and policies of employment departments which have been operating for some time in plants of various sizes and would prefer to answer any inquiries that may arise rather than to be considered as advisors.

A. L. VILES, General Manager.

QUESTIONNAIRE OF REPUBLICAN NATIONAL COMMITTEE ON INDUSTRIAL RELATIONS AND THE PROBLEMS OF CAPITAL AND LABOR.

NEW YORK, March 19, 1920.

To firm and affiliated members:

The Republican National Committee, through its Advisory Committee on Policies and Platform (with headquarters at 19 West 44th street, New York), has distributed a questionnaire on industrial relations and the problems of capital and labor, of which you have doubtless received a copy, as we understand it has been given wide distribution, particularly among manufacturers. If, however, you have not yet received a copy, we shall be very glad to arrange to have one forwarded immediately.

Because of the broad questions of policy and practice which are involved in the questionnaire and because the inquiry is of so searching a nature in the extent to which it goes into detail, it has been thought desirable to have the questionnaire given consideration by our members from the broader point of view of the entire industry, and to this end President Sawyer has requested the Executive Industrial Relations Committee to meet to give consideration to the specific questions presented therein with the view to developing information which, it is believed, will be helpful to members of the association in making their responses to the questionnaire. This committee is to meet next week, and it is expected that the information which may be developed by the Executive Industrial Relations Committee will be available to our members the latter part of the week.

It should be thoroughly understood that such suggestions or information as may emanate from the Executive Industrial Relations Committee, following its examination of the questionnaire, are only offered as possibly of help to our members in their study of it, but because the work of the committee may develop phases of the problems involved which are not apparent to individual members, it may be thought desirable by some of them to await advices from the Executive Industrial Relations Committee before disposing of the questionnaire.

If the suggestion presented in the foregoing is well thought of, we shall be very glad to have our members handle this matter accordingly, and further communications from the Executive Industrial Relations Committee will be transmitted to you as soon as possible. A. L. VILES, General Manager.

SPRING MEETING OF RUBBER CHEMISTS.

The Rubber Division of the American Chemical Society will held its meeting at St. Louis, Missouri, April 14 and 15, in conjunction with the spring meeting of the society. The following program of subjects that are of vital interest to the trade should insure a large attendance.

1. Discussion of report of committee on "Physical Testing."
2. "Bromine Addition to Rubber," W. K. Lewis and Wm. H. McAdams.
3. "Relative Value of Shoddy in Mechanical Rubber," J. M. Bierer.
4. "Recovery of Volatile Solvents," W. K. Lewis.
5. "The Determination of True Free and True Combined Sulphur in Vulcanized Rubber," W. J. Kelly.
6. "Analytical Determination of the Coefficient of Vulcanization," S. W. Epstein.
7. "Small Amounts of Magnesia and Certain Organic Substances as Accelerators," G. D. Kratz and A. H. Flower.
8. "Obscuring Power of Pigments," W. K. Lewis.
9. "The Effect of Compounding Ingredients on the Physical Properties of Rubber" (lantern), C. O. North.
10. Symposium on the testing of pigments. Led by W. W. Evans.

Attention is called to the symposium on "Colloid Chemistry" by the Physical and Inorganic Division. Arrangement will be made, if possible, so that both these papers and those of the Rubber Division will be given at such times as not to conflict with each other.

THE DUNLOP RUBBER CO. OF AUSTRALASIA, LIMITED, INCREASED its profits in 1918 to £145,500 by £30,000 over the year before, and in its report for 1919 the profits increased to £177,000, which enabled the directors, after paying 10 per cent on the preferred shares to distribute 13 per cent to the ordinary shares and to lay away £53,330 in its reserve funds.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

At the annual meeting of the India Rubber Manufacturers' Association, J. T. Goudie, of the Leyland & Birmingham Rubber Co., Limited, vacated the chair after five years of strenuous occupancy, and Stuart A. Russell, of the Silvertown Rubber Co., Limited, was elected to the position; H. C. Coles, of Wm. Warne & Co., Limited, the vice-chairman, having declined the honor. Mr. Coles also gives up the position of vice-chairman and is succeeded by E. Healey, of W. A. Bates, Limited. After the chairman's remarks he was presented with a silver tea and coffee service which had been subscribed for by members of the Association.

Mr. Goudie referred to the fact that during his long chairmanship the membership of the Association had increased to such an extent that it now comprises 98 per cent of the production of the rubber industry in the United Kingdom. Reference was made to the restrictions on the import of American cotton duck while rubber goods containing it had been freely admitted. This anomaly, he stated, had now been removed. Mention was made of the recent increase in railway rates, the incidence of which he said would prove more of a hardship to rubber manufacturers than might be supposed by those who had only seen press references.

Emphasis was laid upon the need for an increased output from labor as now advocated by some of the more important labor leaders who are warning the workers not to be led away by revolutionary methods. A passing reference was made to a matter which is at present causing some controversy, namely, whether rubber garment makers are included in the five shillings per week advance granted to rubber workers by the Trade Council. This point has not yet been satisfactorily settled.

RUBBER SOLES.

As the price of boots keeps high, it is not surprising that the rubber composition soles are increasing in favor. A setback to their use has been that they have been largely barred by the bootmakers and repairers, and many people will not go to the trouble of putting them on for themselves. Moreover, they have not until recently been prominently on sale at a reasonable price. Now, however, permanent makes like the Wood-Milne and Macintosh can readily be bought in our towns at about 2*s.* 6*d.* a pair and shoemakers are ready to nail them on to the leather sole. The firms mentioned make higher qualities, but it was bound to come about, as in the older rubber heel business, that considerable variations in quality are to be met with on sale. Some firms will not touch the cheaper qualities, while others recognize that there is a demand for them.

A new firm in this line is Synthetic Leather, Limited, of Embee Works, Shearbridge Road, Bradford. Mr. Marshall, late of Wood-Milne, is managing director, and only a high quality sole is made, to retail at about 5 shillings a pair.

Another one-time prominent official of Wood-Milne, Walter Wild, having now been demobilized, in company with one or two others, has started the Victor Rubber Co., Limited, at Leyland, and is specializing on rubber soles. Some premises which will shortly be vacated by the Monarch Rubber Co., Limited, of Gladen Street, Bradford Road, Manchester, are to be taken over by the adjoining Rivolite Co., Limited, in order to extend their rubber sole business.

THE PROOFING TRADE.

Despite a general increase in costs of production, this branch of the trade is very busy. Although all classes of proofing are in demand, especially for stripping purposes, there has been a great spurt in the cheaper lines at close competitive prices. One effect of this has been that the oil substitute manufacturers have had a much busier time than during the war. Let us hope that the results generally will prove satisfactory, though past history has many records showing defective work and complaints were much more rife in the lower cut lines of proofing than in the case of high-class proofing.

At the present time most of the retailers are having sales of mackintoshes and waterproofs at about half what is stated to be the usual price, i.e., the war-time price, and it is rather a nice question for the astute purchaser as to whether it is the better economy to buy a mackintosh of good quality two or three years old or a new one at the same price, but really of an inferior quality of proofing owing to the rise in cost of production. The case of weatherproofs is not on all fours because they do not depreciate in wearing value by keeping, but styles change, hence they are now being offered at a considerable reduction.

The oil proofing business shows a renewed activity, the new Ioco Works at Aumisland, near Glasgow, having taken up this branch energetically, although not many of our regular rubber proofers have touched it. This last remark applies also to the shower-proof garment trade. This class of proofing, which is largely concerned with wax, is mostly in the hands of finishers to the textile tenders in Lancaster and Yorkshire, as the calenders, etc., used in the finishing industry are readily adaptable to the wax proofing of cloth so largely used in India and other hot climates.

The name of Burberry's is well known to the sportsman and purchaser of expensive waterproofs, but details as to the production of the special cloth have in the past been known only to a few. Now, however, we are let into the secret by the acquisition by Messrs. Burberry of the cotton mills and business at Farnworth and Manchester of S. & J. Prestwick, who have been the makers and proofers of the Burberry clothes for about twenty years.

A new firm in the proofing trade is Carmac Rubber, Limited, of Huntershill Works, Bishopbriggs, Glasgow. The equipment is extensive in order to undertake proofing to the trade.

THE FEDERATED RUBBER GROWERS AND MANUFACTURERS LIMITED.

This company owns substantially the whole of the share capital of George Spencer-Moulton & Co., Limited, of Bradford-on-Avon and Wood-Milne, Limited, of Leyland, together with the Pundut Rubber Estates, and arrangements have also been entered into with Federated Textiles, Limited, to run a mill at Tittleborough near Rochdale so as to insure the companies having an adequate supply of canvas for their tire production. Rubber footwear is also to be made in a new mill in course of erection at Tittleborough so that the activities of the new company cover a wide range of the trade. For the purpose of financing these developments and for the acquisition of the control of the South African Rubber Manufacturing Co., Limited, as well as for general purposes, an issue of 500,000 six per cent cumulative preference shares of £1 each has been issued at par free of income tax up to 6 shillings in the pound sterling.

NEW MOTOR TAXES.

It is expected that the new tax for motor cars will be based on £1 per horse-power. This appears to have the support of the motor trade as the existing Treasury horse-power formula favors the smaller bore and longer stroke of the average British motor as compared with the larger and slower running American engine.

PEACHEY COLD CURE PROCESS.

S. J. Peachey was billed some months ago to give a paper before the Manchester Section of the Society of Chemical Industry, descriptive of his new process of cold curing rubber without the use of bisulphide of carbon and chloride of sulphur. It is now announced, however, that the paper which was to have been given on March 4, has been postponed to some unknown date, owing to certain circumstances which were not disclosed. I may say that the process is decidedly novel and of great prospective interest and the delay in publication may have something to do with the patent which I understand is being applied for.

GLUE IN RUBBER.

The use of pitch bodies in rubber seem to have been developed in America and now, according to the interesting article on the estimation of glue in rubber in the January number of THE INDIA RUBBER WORLD, glue must be added to the rubber analyst's worries, as it appears to have come to stay in American rubber mixings. I don't profess to be omniscient, and because I have not come across its use in rubber in England the statement must not be taken to mean that it is not already in regular use here. One thing against it, I imagine, is the rise in price which has occurred and the lower quality of the bone glue which is in the market to make up for the deficiency of hide glue.

In certain classes of goods glue and rubber come into close juxtaposition, but are not admixed. I notice that in "Crude Rubber and Compounding Ingredients," by Henry C. Pearson, it is stated that glue is used in bookbinder's cements, cheap frictions and cheap horse-cover compounds with rubber. This is interesting but presumably the "cheap" refers to pre-war days.

COLLOID CHEMISTRY.

This is not an inappropriate subject to come after glue, though the only thing I have to say here about this difficult matter is that it has been decided to found a professorship of colloid chemistry at Manchester University, the first professorship of its kind in the world. A sum of £25,000 is required for the endowment, of which I believe about one-half has been raised by cotton interests, Tootal Broadhurst Lee Co. being much to the fore in the matter. As far as local conversation goes, colloid chemistry means the chemistry of cotton, though readers of this journal have usually associated it with rubber, glue, resins, etc. It will be interesting to see to what extent the new professor will apply himself to problems connected with rubber.

ZINC SULPHIDE.

I was interested in a recent letter in THE INDIA RUBBER WORLD from a maker of zinc sulphide who stated that the works in California are ready to turn out much more if only the rubber trade would give the orders. That is the rub. Despite paragraphs in various rubber books extolling the virtues of zinc sulphide, the demand from the trade has hardly increased at all in the last thirty years, the total consumption being almost negligible, as rubber chemicals go in these days. Of course, in later years a good deal has been used in the compounded form of lithopone and it rather looks as if the extended use of lithopone is all against the employment of zinc sulphide to a greater extent, except in cases such as dental rubber where barytes would be quite inadmissible.

SLATE POWDER.

A company has been formed to market refuse Welsh slate in the form of a very fine powder for use in compounding in the rubber and other industries. Silicates such as fine white clays have certainly come into use in the rubber trade in the last few years to a greater extent than formerly and there may be a future for the new Welsh product.

WILLIAM BOYD STOCKER HAS BECOME CONNECTED WITH GEO. Hankin & Co., 27 Mincing Lane, London, E. C. 3, in a responsible position. Mr. Stocker has been identified with the rubber, balata, and allied trades for a number of years.

FRENCH RUBBER ASSOCIATIONS.

THE FRENCH rubber manufacturers have not formed a single large corporation like The Rubber Association of America, but have preferred to join a series of groups comprising those interested in each specialty. The following is a list of these associations, with their addresses:

Chambre Syndicale des Tissus et du Caoutchouc (fabrics and rubber), 8 rue Montesquieu, Paris.
Chambre Syndicale des Linoleums, Toiles Cuirs et Toiles Cirées (linoleums, artificial leathers, and waxed fabrics), 32 rue Ampère, Paris.
Syndicat de Toiles Circées et Produits Similaires (waxed fabrics and like products), 11 rue de Turbigo, Paris.
Syndicat des Appareils de Chirurgie (surgical appliances), 20 rue Serpente, Paris.
Syndicat des Acessoires de Chirurgie et d'Hygiène (surgical and hygienic accessories), 163 rue Saint Honoré, Paris.
Syndicat de Fournitures d'Usines (factory appliances), 163 rue Saint Honoré, Paris.
Chambre Syndicale des Vêtements en Caoutchouc et Imperméables (rubber clothing and waterproofs), 163 rue Saint Honoré, Paris.
Syndicat des Antidérapants (non-skid devices), 39 rue de Château Landon, Paris.
Syndicat de Caoutchouc et de Linoleum (rubber and linoleum), 18 rue Duphot, Paris.
Syndicat des Fabricants de Celluloid (celluloid products), 7 rue du Jong, Paris.
Syndicat des Planteurs de Caoutchouc de l'Indo-Chine (rubber planters), Saigon, French Indo-China.
Syndicat des Planteurs de Caoutchouc (rubber planters), 48 Place de Meer, Antwerp.
Syndicat des Ingénieurs, Chimistes, Chefs de Fabrication et Contremaitres de l'Industrie du Caoutchouc (union of engineers, chemists, factory heads and foremen in the rubber industry), 49 rue des Vinaigriers, Paris.

The most important associations are the Chambre Syndicale des Tissus et du Caoutchouc, of which Mr. Yung is president and which comprises all the great French manufacturers such as Michelin, Bergougnan, the Société Parisienne, the Société des Téléphones, etc., and the Syndicat des Planteurs de Caoutchouc de l'Indo-Chine.

THE RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

AMONG the many manufacturing industries which arose in Japan during the Great War, the rubber industry must be reckoned among the most promising. Before the war it had been developing gradually, but with the outbreak of hostilities the demand for Japanese rubber articles rapidly increased. Since then, too, the use of rubber goods has become more widespread throughout the Orient. Prior to the war South America, Canada, Australia, India, China and the South Sea Islands had been supplied with rubber articles of British or German make, but the opening of hostilities curtailed or altogether stopped these supplies. Consequently articles made in this country have come to be exported, especially balls, sheets, hose and toys. These articles had not before been extensively manufactured in Japan, but rubber manufacturers had to produce them to meet the home demand, and exportation followed as a natural consequence.

THE TOKIO RUBBER ASSOCIATION.

The first general meeting of this association was held on January 13, 1919, with many prominent officials in attendance, including the deputy of the Minister of Agriculture and Commerce. Since the establishment of the association a year ago its principal activities have been many and important.

On August 5 the officers' meeting was held at the office of the association, when it was decided to raise prices of general rubber manufactures by 20 per cent owing to high prices of naphtha, textiles and wages. But 20 per cent has not proved sufficient and urgent measures are required. Though it is difficult for all manufacturers to make uniform prices inasmuch as the prices must

vary according to the qualities of the goods, ball manufacturers are planning to fix prices uniformly.

A domestic exhibition in commemoration of peace was held at Ueno Park last summer. The Tokio Rubber Association exhibited products of the members, the Mitatsuchi Rubber Manufacturing Co., Nihon Rubber Co., Kyodo Rubber Co., and many other firms and dealers. These articles were well designed and nicely made to attract the attention of spectators, but unluckily the building took fire on August 21 and all exhibits were destroyed.

On May 22, the councillors' meeting was held, and regulations concerning condolences for deceased members were decided upon.

"The Rubber Times" (*"Gomujiho-Sha"*) was recently organized by about twenty officers of the Tokio Rubber Association. It will be published monthly as the official organ of the association to promote the mutual benefit of members. It is expected that the first number will be issued on January 5, 1920.

The general meeting and an appreciation ceremony to reward 124 faithful employes who have served one firm over ten years without interruption, was held on January 11, at the Seiyoken Hotel at Tsukiji, Tokio. Most of the veteran employes rewarded are employed by the Mitatsuchi Rubber Manufacturing Co., the Nihon Rubber Co., and the Meiji Rubber Factory, as they are the oldest firms in Tokio and in Japan. Some of the employes of the Mitatsuchi Company have served over thirty years without interruption.

JAPANESE JINRIKISHA TIRES IN SHANGHAI

According to an investigation by the Shanghai Chamber of Commerce, it was about 1903 that pneumatic jinrikisha tires appeared in that city for the first time. They were made by the Dunlop Rubber Co. (Far East), Limited. Until the Great War this company monopolized the business except for a few German imports made in 1912 by the Continental Caoutchouc & Gutta Percha Co. After the outbreak of the war, some Japanese tires were imported, and fierce competition ensued with the Dunlop tires, the result being that at present all jinrikisha tires in Shanghai are of Japanese make.

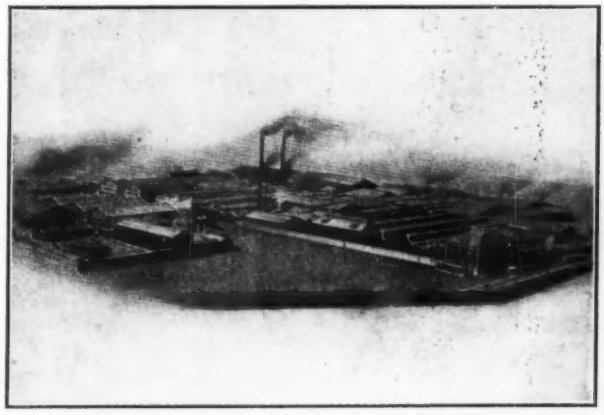
Exceptional conditions have rendered an extension of this business difficult and unremunerative, but now that special tires are being made for the Chinese trade, better results are hoped for. There is more rain in Shanghai than in Japan, the rainy season lasting about four months, from April to July, and shortening the life of tires.

Roads, except the principal thoroughfares, are mostly bad, and some are pebbled, so that tire wear is excessive. Neither owners nor pullers of jinrikishas keep tires in good repair. Jinrikishas are continually used during both day and night. A seven months' guaranty is required. If the tires are damaged within that time, they must be exchanged for new ones. Most tires are damaged within seven months owing to the conditions under which they are used, and the margin of profit is therefore very small.

JAPAN'S PIONEER INSULATED WIRE FACTORY.

In the production of rubber-covered wire for all electrical needs Japan is steadily forging to the front. One of the biggest factors in the trade in the Orient is the *Fujikura Densen Kabushiki Kaisha* (Fujikura Insulated Wire and Cable Co.), 922 Sendgaya-Machi, Tokio. This concern was started in a humble way in 1885 by the late Mr. Fujikura, the pioneer in insulated wire making in Japan. He foresaw that his progressive country would share largely in the rapid, world-wide expansion of electric lighting, telegraph, telephone, and allied industries and installed modern machinery, introduced up-to-date processes, and constantly enlarged his staff of men skilled in chemical and electrical research work. Much credit is also due T. Matsumoto, who succeeded Mr. Fujikura as president of the company, and to Kenzo Okada, known to many in the United States.

The concern adheres closely to the standards of the British Cable Makers' Association and the Japanese government to insure the maximum of efficiency in the products. Among the specialties manufactured is an ozone-proof vulcanized rubber cable designed to withstand the action of ozone, which even on



Fujikura Insulated Wire & Cable Co., Tokio, Japan.

the best rubber-insulated cables will slowly break down the dielectric coating when the gas is produced on the surface or the ends of the cables during the passage of high voltage currents.

Another product is the Fujikura patent okerite or minerite insulated wires and cables, said to be acid and flame proof, nonfiygroscopic, unaffected by sea and mine water, requiring no lead covering, with high conductivity and low electrostatic capacity as well as being tough and pliable even below the freezing point.

FOREIGN CUSTOMS CHANGES.

CANADA.

Canadian duties levied on rubber imports from the United States are as follows: Rubber tires, tire repair kits, tire valves and stems, 42½ per cent ad valorem. Rubber manufactures, rubber engine packing, rubber mats, 42½ per cent. Asbestos manufactures, asbestos brake lining, 32½ per cent. The preferential rates, allowed for British goods, on rubber goods is 22½ per cent.

PORTUGAL.

Portugal now permits the exportation of motor cycles and motor cars, with their tires, to the Portuguese colonies.

BRAZIL.

Brazil proposes to change the existing duty of 15 per cent ad valorem on tires to one of 200 reis (11 cents) per kilogram on solid tires and 600 reis (32½ cents) per kilogram on pneumatic tires.

NEW ZEALAND.

New Zealand now admits free of duty the impregnated cardboard discs, with rubber patch attached, that are a part of vulcanizer outfits.

HUNGARY.

Hungary permits the importation of india rubber, gutta percha and "the goods thereof" without a previous license.

In 1918 the Dominican Republic imported rubber products to the value of $143,976, compared with $84,266 for 1917, the United States supplying goods worth $137,804 and $76,479 in the resepctive periods.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED FEBRUARY 3, 1920.

NO. 1,329,398. Reinforced rubber washer for hose-couplings. F. Hachmann, St. Louis, assignor of one-eighth to D. M. Hutchinson, Ferguson, both in Missouri.

1,329,463. Pneumatic tire construction. H. F. Maranville, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.

1,329,512. Valve for inflating balloons and the like. H. A. Dodge, Essex Fells, and W. J. Leatherow, Newark, assignors to Howe-Baumann Balloon Co., Newark, both in New Jersey. (See THE INDIA RUBBER WORLD, March 1, 1920, page 366.)

1,329,558. Protected rubber packing. M. I. Strauss, Cleveland, O.

1,329,584. Balloon construction. F. De Marinis, Brooklyn, N. Y.

1,329,687. Water-hammock with pneumatic pillows. E. Underwood, Gary, Indiana.

1,329,776. Tire valve adapter. H. P. Kraft, Ridgewood, N. J.

1,329,777. Lined inflatable waterproof garment. M. Kriger, New York City.

1,329,954. Inner tube for pneumatic tires and process of manufacture. O. T. Bugg, Philadelphia, Pa.

ISSUED FEBRUARY 10, 1920.

1,330,061. Tire-retaining ring for clencher rims. W. H. Dillet, Ralston, Okla.

1,330,108. Safety tire valve. W. K. Bauhaus, Carpenteria, Calif.

1,330,222. Cushion wheel. M. Tibbetts, assignor to Packard Motor Car Co.—both of Detroit, Mich.

1,330,299. Bathing hat. J. B. Ballard, assignor to Revere Rubber Co.—both of Providence, Rhode Island.

1,330,329. Safety-valve for observation balloons. J. S. Maxwell, assignor to The Starr Piano Co.—both of Richmond, Ind.

1,330,552. Rubber shoe sole with attaching lip. A. T. Saunders, Chicopee, Mass., assignor to A. G. Spalding & Bros., Jersey City, N. J.

1,330,577. Dust cap for tire valve stems. R. E. Bloom, Brooklyn, N. Y.

1,330,633. Rubber tread for boots and shoes. S. Hilder, Glencarlyn, Va., assignor to F. Berenstein, Chelsea, Mass.

1,330,732. Reinforced pneumatic tire. J. C. Wise, Los Angeles, Calif.

1,330,756. Resilient tire. E. B. Brown, Los Angeles, Calif.

1,330,758. Demountable rim for tires. H. Guthrie, Chicago, Ill.

1,330,759. Pressure gage and pump connection for tire valves. W. P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

ISSUED FEBRUARY 17.

1,330,815. Sectional pneumatic tire. J. B. O'Connor and L. Tarwater, both of Kansas City, Mo.

1,330,973. Wear-resisting structure of rubber having granulated mineral masses embedded therein and the whole vulcanized to a self-supporting backing. G. P. Bartholomew, Essex Falls, N. J., assignor to American Abrasive Metals Co., New York City.

1,331,023. Inner tube for tires. T. L. Morton, New Orleans, La.

1,331,027. Combined corset and corset-waist, having elastic hip and shoulder portion. I. Roussin, Buenos Aires, Argentina.

1,331,042. Sanitary belt and bandage. E. Andrae, Edinburgh, Scotland.

1,331,060. Dust cap for valves of pneumatic tires. W. P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., New York City. (Original application divided.)

1,331,142. Waterproof protector for ladies' hats. W. D. L. Busby, Clifton-upon-Dunsmore, England.

1,331,146. Tire vulcanizing mold. E. W. Fothergill, Hartford, assignor to Hartford Rubber Works Co.—both in Connecticut.

1,331,165. Hydrometer syringe. M. E. Moeller, Brooklyn, N. Y.

1,331,199. Rubber heel. R. I. Hill, assignor to The Hill Rubber Co.—both of Elyria, O.

1,331,347. Quick detachable combined dust and air cap for valve stems. J. M. McNamara, Clinton, Mass.

1,331,358. Resilient cushioned tire. J. Parrino, assignor of one-half to di Giralamo—both of Buffalo, N. Y.

1,331,374. Apparatus for washing eyes. G. C. Precerutti, Turin, Italy.

1,331,457. Garment supporter. J. H. Elliot, Rockford, Ill.

ISSUED FEBRUARY 24, 1920.

1,331,508. Water-tight container for use of bathers. D. R. Kolodny, Brooklyn, N. Y.

1,331,601. Respirator. R. Watanabe, Tokio, Japan.

1,331,606. Resilient tire. T. Widdop, Ogden, Utah.

1,331,855. Tire boot. E. M. Steel, Spokane, Wash.

1,331,917. Cast steel wheel with rim to accommodate rubber tires. A. Hargraves, assignor to The Firestone Steel Products Co.—both of Akron, O.

1,331,954. Anti-slipping attachment for ladders. C. J. Brown, River Falls, Wis.

1,332,121. Demountable rim for tires. L. Friedman, New York City.

1,332,149. Pneumatic tire. P. E. van Berendonck, assignor to Berendonck's Section Tyre Syndicate, Limited—both of Amsterdam, Netherlands.

ISSUED MARCH 3, 1920.

1,332,309. Puncture-proof inflatable inner tube for tires. P. A. Sawyer, Memphis, Tenn.

1,332,673. Pneumatic surf-mattress. H. B. Marshall, Long Beach, Calif.

1,332,721. Vehicle wheel combining pneumatic inner tubes and solid rubber tire. J. E. Harrigan, assignor to Eagle Puncture Proof Tire & Wheel Co., Inc.—both of New York City. (See THE INDIA RUBBER WORLD, April 1, 1919, page 369, and December 1, 1919, page 155.)

1,332,780. Reinforced balloon structure for airships and the like. R. H. Upson, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,332,816. Resilient tire. J. H. Douglass, Norfield, Miss.

ISSUED MARCH 9, 1920.

1,332,933. Pneumatic cushion. E. S. Sylvester, West New Brighton, N. Y., assignor to Rubber Regenerating Co., Naugatuck, Conn.

1,332,953. Pneumatic tire with plurality of interior air cells automatically inflated by means of check valves when air under pressure is admitted into tire. W. H. Richards, Knoxville, Tenn.

1,333,007. Artificial tooth with cushion of soft vulcanizing rubber. R. M. Withycombe, Sydney, New South Wales, Australia.

1,333,091. Valve for pneumatic tires. M. J. Payne, Staunton, assignor to The Payne Valve Corporation, Roanoke—both in Virginia.

1,333,196. Patch material for rubber articles. C. F. Young, Kansas City, Kans.

1,333,232. Demountable rim for tires. F. H. Van Loozen, Lakewood, O.

1,333,261. Teat cup for milking machines with suction nipple at lower end. B. A. Knowles, Azalia, Mich.

1,333,518. Demountable rim for tires. T. F. Ware, Salt Lake City, Utah.

1,333,549. Pressure gage for tires. H. Keynton, West Hoboken, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

THE DOMINION OF CANADA.

ISSUED FEBRUARY 3, 1920.

196,739. Elastic fabric. C. Adams, East Rutherford, N. J., U. S. A.

196,869. Garment gage with elastic edges. H. W. Roswell, Seattle, Wash., U. S. A.

196,871. Armored pneumatic tire. J. V. Royal, Newton, Mass., U. S. A.

196,967. Armored pneumatic tire tube. W. H. Thompson, Marinette, assignor of one-third interest each to B. Brill and S. M. Kohn, Green Bay—all in Wisconsin, U. S. A.

ISSUED FEBRUARY 10, 1920.

197,041. Two-piece easily cleaned rubber mouthpiece for feeding bottles, held in position by stopper. F. R. Graham-Yooll, Leith, Scotland.

197,178. Dust cap for tire valves. The A. Schrader's Son, Inc., New York City, N. Y., assignee of W. P. Hammond, Passaic, N. J.—both in U. S. A.

ISSUED FEBRUARY 17, 1920.

197,232. Hose supporter. F. H. Childs, Stroud, Oklahoma, U. S. A.

197,364. Pneumatic tire. W. P. Gordon, Clarendon, Va., and T. B. Jacocks, Tarboro, N. C., assignee of one-half interest—both in the U. S. A.

ISSUED FEBRUARY 24, 1920.

197,400. Reinforced pneumatic tire. O. A. Kottenmann, St. Louis, Mo., U. S. A.

197,412. Split rim for tires. W. N. Booth, Detroit, Mich., U. S. A.

197,435. Rubber sponge enclosed in fabric casing. G. Fierheller, Toronto, Ont.

197,454. Expansible split rim for tires. J. H. M. Michon, Washington, D. C., U. S. A.

197,455. Expansible split rim for tires. J. H. M. Michon, Washington, D. C., U. S. A.

197,456. Collapsible split rim for tires. J. H. M. Michon, Washington, D. C., U. S. A.

197,461. Detachable rim for tires. H. Mote, 49A Pall Mall, County of London, England.

197,481. Waterproof catamenial bandage. S. D. Trumbo, Columbus, O., U. S. A.

197,530. Disk wheel for pneumatic tires, with means for fastening together the disks so that they rotate as a unit. Dunlop Rubber Co., Limited, Westminster, County of London, assignee of F. J. Keegan, Coventry, County of Warwick—both in England.

197,531. Metal vehicle wheel arranged for single or dual solid rubber tires. The Dunlop Rubber Co., Limited, Westminster, London, assignee of C. Macbeth, Birmingham, County of Warwick—both in England.

197,532. Solid rubber tire. The Dunlop Rubber Co., Limited, Westminster, London, assignee of H. C. Young, Birmingham, County of Warwick—both in England.

197,534. Demountable rim for tires. The Goodyear Tire & Rubber Co., Westminster, London, England, assignee of J. B. Atkins, Akron, Ohio, U. S. A.

197,557. Suspenders. The Resilia Manufacturing Co., Cambridge, Mass., assignee of H. T. Smith, Providence, R. I.—both in U. S. A.

197,561. Pressure gage for tires. A. Schrader's Son, Inc., New York City, assignee of J. A. Bowden, Los Angeles, Calif.—both in U. S. A.

197,579. Demountable rim for tires. W. Beeman and B. Palmer, co-inventors, assignors of one-half interest to E. S. Beeman—both of Laporte, Indiana, U. S. A.

THE UNITED KINGDOM.

ISSUED FEBRUARY 4, 1920.

135,874. Insulated electric cables. C. J. Beaver, Rangemoor Crescent Road, Hale, and E. A. Claremont, Broom Cottage, High Legh—both in Cheshire.

135,929. Solid rubber sectional tire. Dunlop Rubber Co., 14 Regent street, Westminster, and C. Macbeth, Para Mills, Aston Cross, Birmingham.

135,995. Rim for tires. W. J. Mellersh-Jackson, 28 Southampton Buildings, London. (Detroit Pressed Steel Co., 1800 Mount Elliott avenue, Detroit, Mich., U. S. A.)

136,068. Elastic book-marker. W. Horn, 132 Palewell Park, East Sheen, Surrey.

136,070. Elastic heel friction pad. J. A. Drechsler. 96 Budlong street, Hillsdale, Mich., U. S. A.

136,265. Resilient cushioned wheel. H. Wade, 111 Hatton Garden, London. (Morand Bros.—Martin Cushion Wheel Co., 818 South May street, Chicago, Ill., U. S. A. See THE INDIA RUBBER WORLD, November 1, 1918, page 88.)

Chemical Patents will be found on pages 427, 428. Machinery Patents on pages 431, 432.

ISSUED FEBRUARY 11, 1920.

136,409. Elastic fabric. E. W. Pattison, 51 Deansgate Arcade, Manchester. (Victory Corset Co., 20 Vesey street, New York City, U. S. A.)
136,410. Window-cleaning device. H. T. Girdlestone, 25 Glasshouse street, Regent street, London.
136,483. Glove with hooded portion held in place by elastic band. T. Hilton, Brou-Ala, Mottram Road, Matley, Stalybridge, Cheshire.
136,621. Respirator. El Conde de Ramirez de Arellano, Bachelor's Farm, Horsham, Sussex.
136,731. Billiard cues. W. F. Coward, 60 Dean street, South Shore, Blackpool, Lancashire.
136,770. Infant's rubber pants. A. E. White, 88 Chancery Lane, London. (I. B. Kleinert Rubber Co., 725 Broadway, New York City, U. S. A. See THE INDIA RUBBER WORLD, December 1, 1919, page 157, for illustrated description.)
136,792. Golf clubs with striking face of rubber between pieces of vulcanized fiber, etc., A. F. J. Percival, Golf Club House, Highcliffe, Castle Golf Club, Highcliffe, Hampshire.
136,802. Garter. R. Gorton, 143 Freeman street, Brookline, Massachusetts, U. S. A. (Not yet accepted.)
136,803. Garter. R. Gorton, 143 Freeman street, Brookline, Massachusetts, U. S. A. (Not yet accepted.)

ISSUED FEBRUARY 18, 1920.

136,916. Door mats composed of rubber rollers threaded on wires between metal scraper strips. G. Gibson, 17 St. Paul's Square, Bedford.
136,946. Cushioned spring wheels. E. Jacqmain and J. Kucharek, 19 Rue de la Plaine, Brussels.

ISSUED FEBRUARY 25, 1920.

137,066. Dust cap for tire valves. A. Schrader's Son, Inc., Brooklyn, N. Y., assignee of E. V. A. Myers, 82 Evergreen Place, East Orange, N. J.—both in U. S. A. (Not yet accepted.)
137,067. Dust cap for tire valves. A. Schrader's Son, Inc., Brooklyn, N. Y., assignee of E. V. A. Myers, 82 Evergreen Place, East Orange, N. J.—both in U. S. A. (Not yet accepted.)
137,097. Inhaler. V. Milan, 32 Via del Leoncino, Rome.
137,103. Pneumatic tires. E. H. Taylor, 92 Bennett's Lane, Smithills, Bolton, Lancashire.
137,139. Reinforced composite material in layers, containing rubber, etc. R. Russell, The Acres, Middleton, near Manchester.
137,140. Rubber cushion devices for vehicle doors. A. S. Cheston, Cheston, Widney Works, St. Paul's Square, Birmingham.
137,143. Metal-studded rubber soles and heels with leather insets. R. T. Hull, Haughton Hall, Denton, Lancashire, and B. Mellor, Mottram New Road, Hyde, Cheshire.
137,165. Powder puff case of rubber, etc. F. Mousley, Priest Bridge, Mortlake, London.
137,222. Collapsible rim for tires. J. H. Miskimen, Glendive, Montana, U. S. A.

ISSUED MARCH 3, 1920.

137,253. Abdominal belt. H. A. Monin, 53 rue Petit, St. Denis, Seine, France.
137,306. Pneumatic tire. H. S. Blynt, Yale, Oklahoma, U. S. A. (Not yet accepted.)
137,309. Rubber sole protector. R. G. Fabregas, 3 Plaza Galvany, Barcelona, Spain. (Not yet accepted.)
137,328. Tube for ethyl chloride, etc., with rubber-padded stopper. A. Schrader's Son, Inc., Brooklyn, N. Y., assignee of H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J.—both in U. S. A. (Not yet accepted.)
137,331. Tire valve. A. B. Norwalk, 740 Riverside Drive, New York City, U. S. A. (Not yet accepted.)
137,389. Rubber pads for soles and heels. W. H. Phipps, 57 Wick Road, and W. T. Hooper, 71 Repton Road—both in Brislington, Bristol.
137,448. Golf-club handle with insertion of molded rubber beneath wrappings. J. S. Jones, Rosemont, Warbrick Hill Road, Blackpool.

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

496,743. (March 8, 1919.) Valve for pneumatic tires. A. Schrader's Son, Inc.
496,770. (March 10, 1919.) Improvements in waterproofing materials and the process of manufacture. L. Kirschbraun.
496,788. (July 3, 1918.) Parachute having pneumatic device. A. Ramaugé.
496,849. (March 11, 1919.) Improvements in solid rubber tires. The Dunlop Rubber Co., Limited.
497,069. Improved manometer for pneumatic tires. A. Schrader's Son, Inc.
497,375. (March 26, 1919.) Elastic fabric. Victory Corset Co., Inc.
497,964. (February 21, 1919.) Valve for pneumatic tires. C. Carenini.
498,074. (April 9, 1919.) Improvements in resilient wheels. M. W. Peck.
498,347. (September 19, 1917.) Rubber tip for canes, crutches, furniture, etc. M. Taritot, 29 rue Mogador, Paris.
498,410. (April 16, 1919.) Improvements in rubber heels. A. Bendoni et Cie.
498,697. (August 25, 1916.) Improvements in coverings for pneumatic tires. T. Duysens and R. Hustinx.
498,755. (April 29, 1919.) Improvements in wheels, especially those with pneumatic tires for automobiles. M. Kapferer.
498,767. (April 29, 1919.) Composition to plug automatically punctures in pneumatic tires. J. H. Jacobsen.
499,034. (May 6, 1919. Cap for valves of pneumatic tires. A. Schrader's Son, Inc.
499,337. (May 9, 1919.) Valve for pneumatic tires. A. Schrader's Son, Inc.
499,337. (May 9, 1919.) Valve for pneumatic tires. A. Schrader's Son, Inc.
499,413. (May 12, 1919.) Pneumatic wheel. G. C. M. J. Lentz.

GERMANY.

PATENTS ISSUED, WITH DATES OF APPLICATION.

320,204. (July 13, 1917.) Elastic tire. B. Iwanowsky, Mainz.
320,365. (April 7, 1916.) Pneumatic tire with reserve tubes. M. S. Stevenson, London, England.
320,723. (August 5, 1913.) Solid rubber tire. H. B. Clayson, Sydenham, London.
320,926. (October 31, 1918.) Hose coupling. E. Kessler, Basel, Switzerland.

AUSTRALIA.

PATENTS ISSUED, WITH DATES OF APPLICATION.

7,276. (May 8, 1918.) Motor tire cover. J. H. Gill, J. D. Rea and L. Sanderson.
7,328. (May 11, 1918.) Vehicle wheels and tires. J. R. Churchill.
7,340. (May 11, 1918.) Resilient tires. H. L. Harding.
7,813. (June 27, 1917.) Resilient tire. A. J. Ostberg and A. Kenny.
8,388. (August 21, 1918.) Cushion tires. C. W. Le Plastrier. (Morand Bros.-Martin Cushion Wheel Co.; W. C. Martin.)
8,920. (September 4, 1917.) Inner tube. J. B. Jeffries.
8,953. (March 28, 1918.) Tire valve. M. C. Schweinert.
9,686. (December 31, 1919.) Cushion wheel. C. W. Le Plastrier. (Morand Bros.-Martin Cushion Wheel Co.; W. C. Martin.)

NEW ZEALAND.

ISSUED DECEMBER 31, 1919.

42,594. Two-piece easily cleaned rubber mouthpiece for feeding-bottle, held in place by stopper. F. R. Graham-Yooll, Dulham Towers, East Trinity Road, Leith, Scotland.

TRADE MARKS.

THE UNITED STATES.

NO. 96,047. The word UNISCO—automobile-fan belts, fabric belts, rubber or/and fabric hose, etc. C. H. Buettner, Cincinnati, O.
99,120. The word FOSTER in white and black letters against a red and gold background—rubber soles and heels. Foster Rubber Co., Kennebunk, Me., and Boston, Mass.
106,343. The words HEET and SHEET within horizontal hexagonal inclosures placed to the right and left of a large letter E—packing made of asbestos fiber, rubber, and fireproof cement, in the form of gaskets. Eureka Packing Co., Sales Department, New York City.
107,773. The words PUMP-KING, one above the other, with a hyphen in front of the lower one—rubber belting. New York Belting & Packing Co., New York City.
109,994. Representation of a bare-legged boy kneeling within and peeping out from a raincoat apparently on a support, topped by a rain-hat—waterproof coats, hats, suits and leggings. Union City Manufacturing Co., Union City, Tenn.
112,154. The word OVERLAND—rubber and fabric tires. United States Tire Co., New York City.
113,425. Rrepresentation of a lion in repose above the words LION PAW BELTING—asbestos brake linings. Buckner Process Co., Worcester, Mass.
114,607. The word GOETZERIT—asbestos composition packings. Goetze Gasket & Packing Co., New Brunswick, N. J.
115,257. The word Senegal beneath a lion couchant—impregnated canvas belting. The Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
115,657. The word FARREL—rubber machinery. Farrel Foundry & Machine Co., Ansonia, Conn.
116,950. The words BI-LATERAL—rubber-lined cotton-jacketed fire hose. C. M. C. Baird, Chicago, Ill.
117,767. The word ARTCO within a triple-outlined diamond—rubber tire casings and tubes, belting, fruit-jar rings, hose, etc. Achilles Rubber & Tire Co., Inc., Binghamton, N. Y.
118,776. The word CENTURY—rubber stamps, etc. Century Rubber Stamp Works, New York City.
119,007. The word VALCUA—leather, rubber, and balata belting; asbestos, etc., valve and disk packings, and rubber hose. Pacific Mill & Mine Supply Co., San Francisco, Cal.
119,040. Representation of an oval figure formed of a black band—fabric and rubber belting. The Manhattan Rubber Manufacturing Co., New York City.
119,091. The word USCO—jar rings. United States Rubber Co., New Brunswick, N. J.
119,879. The words SAVING, SERVICE and SATISFACTION within the representation of a tire—tires and tubes. Automobile Owners Tire Corp., Sioux City, Ia.
120,466. The word RADIO—rubber and fabric tires. Ellis Miller, New York City.
120,538. Representation of a seal bearing the figure of a woman and the words THE FASHION PLATE—rubber shoes, etc., for men, women, and children. Johnson, Stephens & Shinkle Shoe Co., St. Louis, Mo.
120,851. The word GUMBO—self-vulcanizing patches. Moses Strause, San Francisco, Cal.
121,308. Representation of a leech bearing the words in white letters, Sticks Like a LEECH—tube patches. The Leach Patch Co., Indianapolis, Ind.
121,401. Representation of a circular seal with a globe in the center surrounded by 20 six-pointed stars within a circle, and outside the circle the words THE MANHATTAN RUBBER MFG. CO., PASSAIC, N. J., all surrounded by a heavily outlined circle and a lighter concentric one—belting, packing, and hose of rubber or rubber and fabric. The Manhattan Rubber Manufacturing Co., Passaic, N. J.
121,758. Representation of a shield bearing the initials C and P formed into a monogram, within two scrolls bearing the words CHICAGO PNEUMATIC, the whole conventionally decorated—rubber-lined cotton hose of different kinds, including wire-wound. Chicago Pneumatic Tool Co. Chicago, Ill.
121,979. The initials S & K—rubber repair patches for tires and tubes. J. F. Kirchner, Parma Township, Cuyahoga County, O.

122,394. The word KEWPIE—sanitary baby pants. Maude Sinclair George, St. Louis, Mo.

122,719. The word MAJESTIC—rubber tires. The Majestic Tire & Rubber Co., Indianapolis, Ind.

122,832. Representation of a gryphon—air valves for tires, cushions, life-preservers, etc. Griffin Manufacturing Co., Boston, Mass.

123,202. Representation of a seal bearing the words CONVERSE RUBBER SHOE CO. on the arms of a large letter C forming the initial for the additional word CONVERSE—rubber boots and shoes. The Converse Rubber Shoe Co., Malden, Mass.

123,229. Representation of a tire rolling through the letter U and leaving an impression of its tread—fabric and rubber tires. Universal Tire & Rubber Association, Houston, Tex.

123,240. The word COLZO within two concentric ovals, the inner one much heavier in outline—lithopone. Collinsville Zinc Corp., Collinsville, Ill.

123,297. Representation of two elephants braced against opposite sides of a globe, having a tug-of-war with their trunks; on the globe a monogram formed of the letters A. W. M. E. C.—elastic webbing. American Webbing Manufacturers Export Corp., New York City.

123,395. The words THE OHIO SUSPENDER CO.—suspenders, garters, and belts for personal wear. The Ohio Suspender Co., Mansfield, O.

123,480. The words VULCO CORD—rubber tires. The Gates Rubber Co., Denver, Colo.

123,563. Representation of an ornamental design incorporating the words 1 CENT BLUE BIRD GUM and the figures of two bluebirds within conventionalized scrolls—chewing gum. Universal Products Co., Kansas City, Mo.

123,875. Representation of a seal bearing the words COINGUM MFG. CO., 921 LOCUST ST., PHILA., BEST OF ALL GUM—chewing gum. Coingum Manufacturing Co., Philadelphia, Pa.

123,989. Representation of a scroll bearing the words LARSON'S KRUSHED FRUIT—chewing gum. L. P. Larson, Jr., Co., Chicago, Ill.

124,052. The word DRICOTA—raincoats. Edward Ripley & Son, Limited, Bradford, Eng.

124,264. The word REVO—rubber heels. Thomas M. Evans, East Providence, R. I.

124,265. The word WIDS—rubber or composition soles, heels, and taps. Fibre Products Co., Boston, Mass.

124,277. The words MARA THON—rubber belts for personal wear. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.

124,354. The words LOOP-O-PLANE—toy airplanes. Percy Pierce, Philadelphia, Pa.

124,420. The word WONDERWEB with end and center letters capitalized—woven elastics in the piece. Rice-Stix Dry Goods Co., St. Louis, Mo.

124,446. The word NONAME—rubber heels. Plymouth Rubber Co., Canton, Mass.

124,468. Representation of a round label bearing the picture of a cavalier bowing and the words THE CAVALIER HOSE SUPPORTER within concentric circles—hose supporters. Roy J. Cavalier, Oswego, N. Y.

124,996. The letters K, Y, and L formed into a monogram above the words K-WEYL—chewing gum, etc. Keebler Weyl Baking Co., Philadelphia, Pa.

125,255. The words RED X—rubber cement, tread filler, tire tape, tire repair gums, and tread repair gums. St. Louis Rubber Co., St. Louis, Mo.

126,048. The word WORTHMORE in black letters on a white rectangle against a black diamond—suspenders and dress shields. McDonald Bros. Co., Minneapolis, Minn.

THE DOMINION OF CANADA.

25,715. The word JIFFY—rubber baby pants. The I. B. Kleinert Rubber Co., New York City, U. S. A.

25,729. The word HYGEIA—nursing appliances and nipples. The Hygeia Nursing Bottle Co., Inc., Buffalo, New York City, U. S. A.

25,735. Representation of a label in the form of a shield having an oval centerpiece bearing the figure of a beaver with a log; around oval are words CANADIAN CONSOLIDATED RUBBER CO., LIMITED, and AND ASSOCIATED COMPANIES; above the oval centerpieces is the word Raynster in large letters—raincoats, rubber coats, and other rubber clothing, etc. Canadian Consolidated Rubber Co., Limited, Montreal, Que.

25,742. The word DIAMOND and the representation of a diamond in a claw setting—rubber tissues, etc. Will P. White, Limited, Toronto, Ont.

25,803. The word EXCELSIOR—tire casings. Hercules Rubber Co., Limited, Brampton, Ont.

25,854. The word REPUBLIC—belting, hose, machinery packing, tires, tire casings, and inner tubes. Republic Rubber Corp., Youngstown, O.

DESIGNS.

THE UNITED STATES.

NO. 54,373 Tire. Patented February 10, 1920. Term 14 years. W. P. Braender, Passaic, N. J.

54,408. Tire. Patented February 10, 1920. Term 3½ years. C. C. Gates, Denver, Colo.

54,412. Tire tread. Patented February 10, 1920. Term 14 years. A. H. Harris, Barberton, assignor to The Cleveland Rubber Corp. Co., Cleveland—both in Ohio.

54,434. Pneumatic tire tread. Patented February 10, 1920. Term 3½ years. J. Martin, New York City.

54,496. Tire. Patented February 17, 1920. Term 14 years. J. Christy, Cleveland, assignor to The Portage Rubber Co., Barberton—both in Ohio.

54,415. Rubber tread for shoes. Patented February 17, 1920. Term 14 years. C. M. Wolcott, Baltimore, Md.

54,521. Tire tread. Patented March 2, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,522. Tire tread. Patented March 2, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,523. Tire tread. Patented March 2, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,534. Tire. Patented March 2, 1920. Term 14 years. J. W. Denmead, Akron, O.

54,536. Tire. Patented March 2, 1920. Term 14 years. C. E. Eckrode, Newark, N. J.

54,550. Rubber heel. Patented March 2, 1920. Term 14 years. R. Harris, Cleveland, O.

54,551. Tire tread. Patented March 2, 1920. Term 14 years. H. Ives, Chippewa Falls, Wis.

54,553. Ice-bag ring. Patented March 2, 1920. Term 7 years. F. Lobl, Middleboro, Mass.

54,555. Tire. Patented March 2, 1920. Term 14 years. C. E. Murray, assignor to Empire Rubber & Tire Corp.—both of Trenton, N. J.

54,556. Tire. Patented March 2, 1920. Term 14 years. C. E. Murray, assignor to Empire Rubber & Tire Corp.—both of Trenton, N. J.

54,560. Tire. Patented March 2, 1920. Term 7 years. T. R. Palmer, Erie, Pa.

54,564. Pneumatic metal wheel. Patented March 2, 1920. Term 14 years. H. E. and P. R. Simmons, Huntington, Ind.

54,570. Tire. Patented March 2, 1920. Term 14 years. O. H. Williams, Columbus, O.

54,576. Tire. Patented March 9, 1920. Term 14 years. O. Basten, assignor to Sterling Tire Corp.—both of Rutherford, N. J.

54,580. Tire tread. Patented March 9, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,581. Tire tread. Patented March 9, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,582. Tire tread. Patented March 9, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,583. Tire tread. Patented March 9, 1920. Term 14 years. E. O. Blekre, Sioux City, Ia.

54,592. Tire tread. Patented March 9, 1920. Term 14 years. W. B. Buckley, Washington, D. C.

54,598. Tire. Patented March 9, 1920. Term 14 years. J. Christy, Cleveland, assignor to The Portage Rubber Co., Barberton—both in Ohio.

54,599. Tire. Patented March 9, 1920. Term 7 years. W. H. Clarke, Elyria, O.

54,600. Pad for soles of boots and shoes. Patented March 9, 1920. Term 7 years. J. P. Cochrane, Edinburgh, Scotland.

54,601. Pad for soles of boots and shoes. Patented March 9, 1920. Term 7 years. J. P. Cochrane, Edinburgh, Scotland.

54,608. Tire. Patented March 9, 1920. Term 14 years. F. S. Dickinson, New York City.

54,624. Tire tread. Patented March 9, 1920. Term 14 years. L. de Holczer, assignor to Zonta Tire & Rubber Co.—both of Sioux City, Ia.

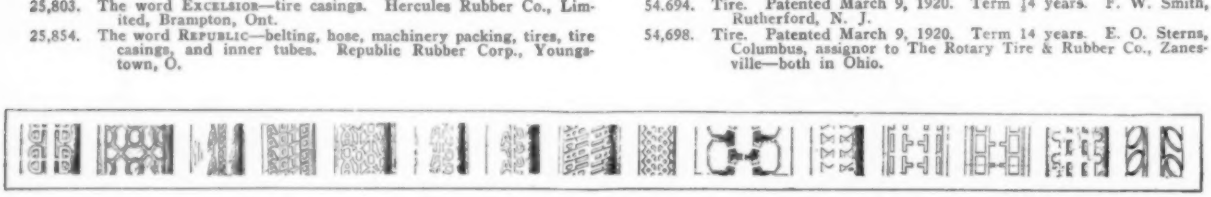
54,625. Tire tread. Patented March 9, 1920. Term 14 years. L. de Holczer, assignor to Zonta Tire & Rubber Co.—both of Sioux City, Ia.

54,647. Tire. Patented March 9, 1920. Term 7 years. J. C. McLean, Lakewood, assignor to The McLean Tire & Rubber Co., East Liverpool—both in Ohio.

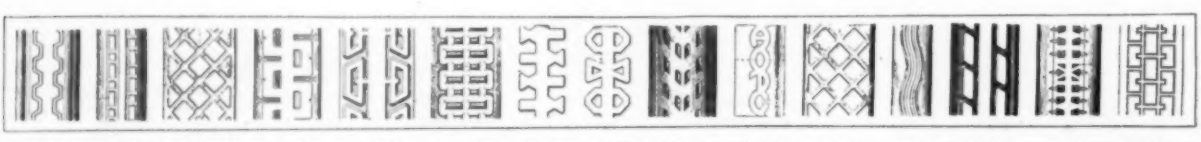
54,691. Tire. Patented March 9, 1920. Term 14 years. F. A. Seebach, Akron, O.

54,694. Tire. Patented March 9, 1920. Term 14 years. F. W. Smith, Rutherford, N. J.

54,698. Tire. Patented March 9, 1920. Term 14 years. E. O. Sterns, Columbus, assignor to The Rotary Tire & Rubber Co., Zanesville—both in Ohio.

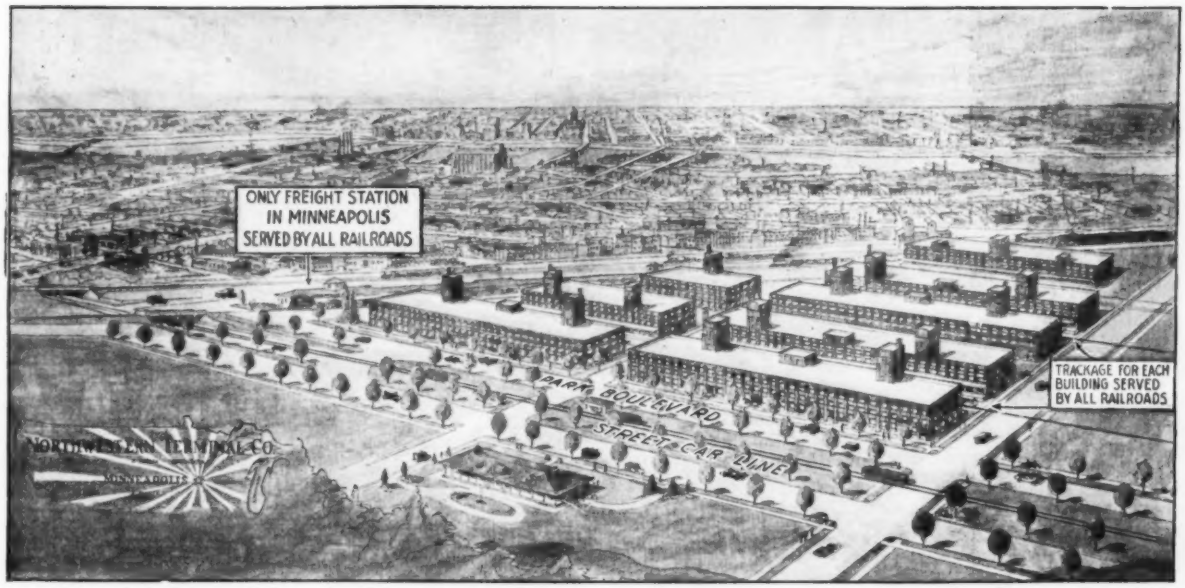


54,373 54,412 54,521 54,522 54,523 54,580 54,581 54,582 54,560 54,570 54,592 54,624 54,625 54,647 54,694



54,408 54,434 54,496 54,534 54,536 54,551 54,555 54,556 54,576 54,583 54,598 54,599 54,608 54,691 54,698

Distribution



The New Tire and Rubber Center in Minneapolis has solved the problem of distribution in the Northwest.

¶ Located on *all* the Railroads entering Minneapolis and serving the Northwestern States and Western Canada.

¶ Direct tunnel connection with Station for *all* LCL freight, Express and Parcel Post—Operated by the Northwestern Terminal Co.

¶ 80 per cent of the entire floor space now nearing completion already leased to Goodyear, Firestone, Goodrich and other strong rubber companies.

FOR DETAILED INFORMATION REGARDING SPACE, ADDRESS

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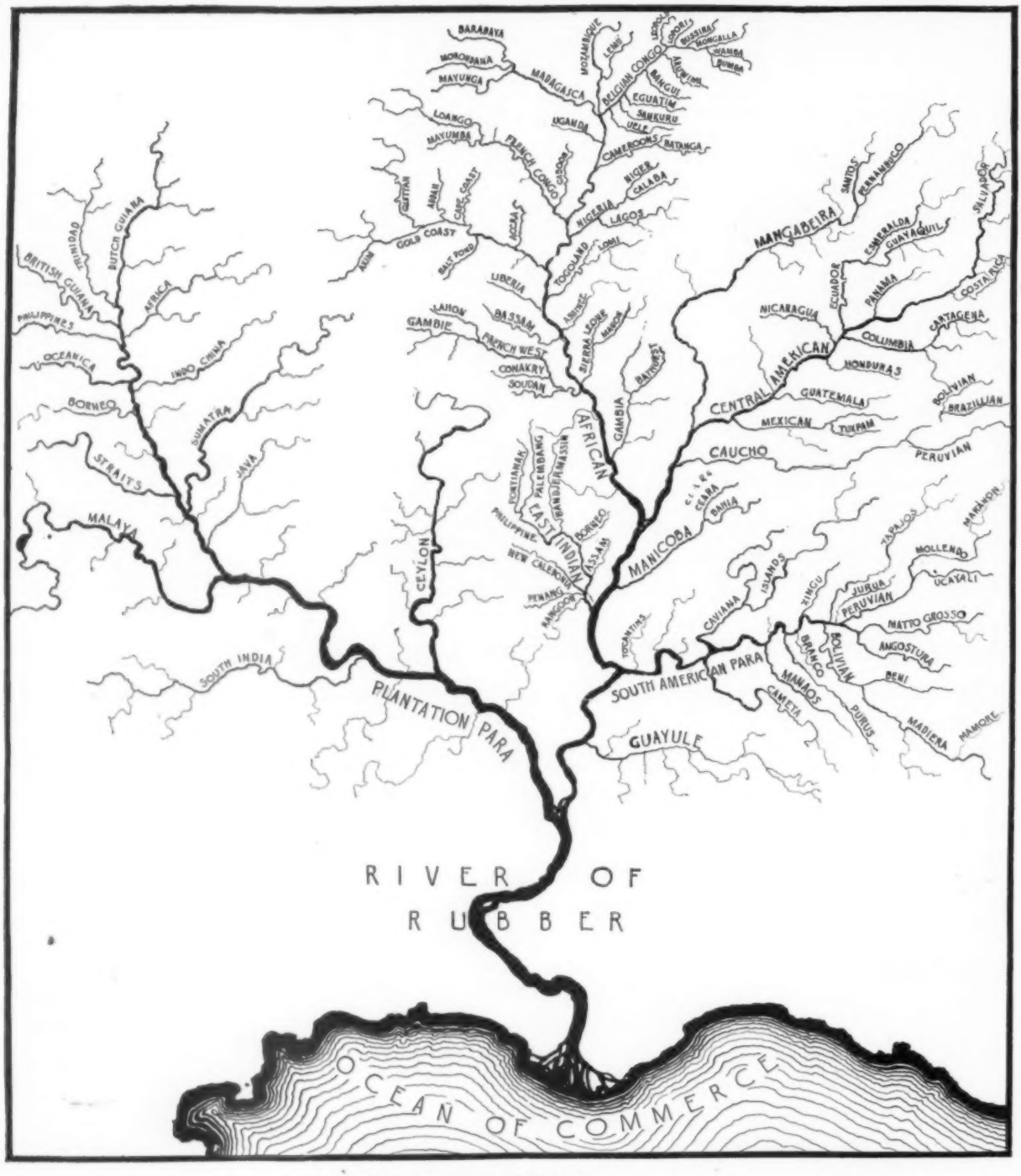


THE RIVER OF RUBBER.

Two hundred million gallons of rubber milk from the world's rubber trees are what the River of Rubber delivered in 1919. This, translated into terms of dry rubber, is more than 300,000 tons.

This great stream has affluents, big and little, in all parts of the tropical and subtropical world.

The main streams (or grades of rubber) are five, Central American, South American, African, East Indian and Plantation. These, in turn, are divided into some eighty sorts, bearing the names of territories, rivers and ports. A further subdivision, due to varying methods of collection and coagulation, brings the number of commercial sorts up to about 240.

Not many years ago Brazil was the main source of supply, with a yearly production of 35,000 to 40,000 tons. There was the added product of Central American trees, and those of Southern Asia. Then came the vine, root and tree rubbers of Africa and the shrub rubber of Mexican deserts. Still later, plantation rubber became a factor, constantly increasing, until it now supplies four-fifths of the total.

In 1917 the world's crop was 265,698 tons, of which 213,070 tons were plantation, with 39,370 tons from Brazil and 13,258 tons from all other sources. In 1918, restrictions, mainly on account of the Great War, reduced production nine per cent, the figures being 200,950 tons plantation, 30,700 tons Brazilian and 9,929 tons from other countries. The estimated figures for 1919 are 292,000 tons plantation, 35,000 tons Brazilian and 6,500 tons from other sources, with a reserved stock of 50,000 tons, makes a total of 384,000.

Review of the Crude Rubber Market.

NEW YORK.

THE CRUDE RUBBER MARKET remained firm and quiet throughout March, with two or three slight breaks in which the prices advanced or receded a cent or two. There was some trading among dealers; the manufacturers, however, did little buying.

Parás are picking up a little. Prices at the end of the month are very nearly the same as at the beginning, in spite of the partial recovery in exchange and the very large arrivals of crude rubber. This probably all goes to fill forward orders.

Prices for plantation and South American rubber at the beginning and toward the end of the month are shown in the following quotations:

PLANTATIONS. March 1, first latex crêpe, spot 46½ cents; futures, April-June, 47½ cents; July-September, 48½ cents; July-December, 94½ cents; March 25, spot, 47½ cents; April-June, 49 cents; July-December, 51 cents.

March 1, ribbed smoked sheets, spot 46½ cents; April-June, 47½ cents; July-September, 48½ cents; July-December, 49½ cents; March 25, spot, 47 cents; April-June, 49 cents; July-December, 51 cents.

March 1, No. 1 amber crêpe, spot, 46 cents; April-June, 46½ cents; July-December, 47 cents; March 25, spot, 46½ cents; April-June, 47½ cents; July-December, 48½ cents.

March 1, No. 1 rolled brown crêpe, spot, 39 cents; March 25, spot, 40 cents; April-June, 40 cents; July-December, 40½ cents.

SOUTH AMERICAN PARÁS AND CAUCHO. March 1, spot prices: upriver fine 42 cents, islands fine 42 cents, upriver coarse 31½ cents, islands coarse 20½ cents, Cametá coarse 21½ cents, caucho ball 31½-32 cents.

March 25, upriver fine 42-42½ cents, islands fine 42½ cents, upriver coarse 31½ cents, islands coarse 21½ cents, Cametá coarse 22 cents, caucho ball 32½ cents.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on March 25, the current date:

	April 1, 1919.	March 1, 1920.	March 25, 1920.
PLANTATION HEVEA—			
First latex crêpe	$0.51 @	$0.47 @	$0.47½ @
Amber crêpe No. 1	.48 @	.46 @	.46½ @
Amber crêpe No. 2	.47 @	.45 @	.45½ @
Amber crêpe No. 3	.46 @	.44 @	.44½ @
Amber crêpe No. 4	.45 @	.43 @	.42½ @
Brown crêpe, thick and thin clean	.46 @	.44 @.45	.43 @
Brown crêpe, thin specky	.43 @	.41 @.42	.41 @
Brown crêpe, rolled	.35 @	.40 @	.40 @
Smoked sheet, ribbed, standard quality	.50 @	.46 @	.47 @
Smoked sheets, plain, standard quality	.48 @	.41 @	.45 @
Unsmoked sheet, standard quality	.49 @	@	@
Colombo scrap No. 1	@	@	.33 @
Colombo scrap No. 2	@	@	.31 @
EAST INDIAN—			
Assam crêpe	@	@	@
Assam onions	@	@	@
Penang block scrap	@	@	@
SOUTH AMERICAN—			
PONTIANAK—			
Banjermassin	.13½ @	.13 @	.13 @
Palembang	@	@	@
Pressed block	.20 @	.27 @	.25 @
Sarawak	@	@	@
PARÁS—			
Upriver fine	.56 @	.42 @	.42 @.42½
Upriver medium	.51 @	@	.39½ @.40
Upriver coarse	.34 @	.31½ @	.31¾ @.32
Upriver weak, fine	.44 @	@	.35 @
Islands, fine	.48 @	.42 @	.42½ @
Islands, medium	.43 @	@	.39½ @.40
Islands, coarse	.22 @	.20 @	.21 @.21½
Cametá, coarse	.23 @	.21 @	.21 @.21½
Madeira, fine	@	@	@
Acre Bolivian, fine	@	@	@
Peruvian fine	.53 @	@	.40¼ @
Tapajos fine	.53 @	@	@
SOUTH AMERICAN—			
CAUCHO—			
Lower caucho ball	.31 @	.32 @	.30 @
Upper caucho ball	.34 @	@	.32½ @
MANICOBAS—			
Ceara negro heads	@	.36 @	.36 @
Ceara scrap	@	.30 @	.30 @
Manicoba, 30% guarantee	.34 @	.32 @	.32 @
Mangabeira thin sheet	.38 @	.30 @	.30 @
CENTRALS—			
Corinto scrap	.33 @	.29 @	.28 @.29
Esmeralda sausage	.33 @	.29 @	.27 @.28
Central scrap	.33 @	.30 @	.26 @.27
Central scrap and strip	.32 @	.27 @	.25 @.26
Central wet sheet	.23 @	.24 @	.20 @
Guayule, 20% guarantee	.30 @	.27 @	.27 @
Guayule, washed and dried	.40 @	.38 @	.38 @
AFRICANS—			
Niger flake, prime	@	.17½ @	.18½ @
Benguela, extra No. 1, 28%	@	@	.26½ @
Benguela, No. 2, 32½%	@	@	.23 @
Congo prime, black upper	@	.38 @	@
Congo prime, red upper	@	.35 @	@
Kassai black	@	.39 @	.38 @
red	@	@	@
Rio Nunez ball	@	@	@
Rio Nunez sheets and strings	@	.37 @	.36 @
Conakry niggers	@	.36 @	.35 @
Massai sheets and strings	@	@	@
GUTTA PERCHA—			
Gutta Siak	.23 @	.31 @	.29 @.30
Red Macassar	3.60 @	2.65 @	2.60 @
BALATA—			
Block, Ciudad Bolivar	.76 @	.52 @	.58 @.60
Colombia	.58 @	.46 @	.49 @.50
Panama	.56 @	.40 @	.40 @.46
Surinam sheet	.96 @	.75 @	.78 @
amber	.98 @	.78 @	.82 @

RECLAIMED RUBBER.

Essentially the same conditions which prevailed in the reclaimed rubber market during February controlled the situation of reclaimed in all grades during March. Reclaimers are oversold for from two to three months, consequently are not seeking business. Prices, however, have not been advanced and remain as reported last month. Current buying is in relatively small volume and large users are not seeking to make commitments beyond the middle of the year.

NEW YORK QUOTATIONS.

March 25, 1920.

Prices subject to change without notice.

Standard reclaims:		
Floating	$0.30	@$0.35
Friction	.35	@ .40
Mechanical	.12½	@ .13½
Red	.23	@ .24
Shoe	.16	@ .16½
Tires, auto	.16	@ .17
truck	.13	@ .14
White	.22	@ .25

COMPARATIVE HIGH AND LOW NEW YORK SPOT RUBBER PRICES.

	March.					
	[1]1920.		1919.		1918.	
PLANTATIONS:						
First latex crêpe	$0.48¾ @	$0.45½	$0.56 @	$0.51	$0.60 @	$0.55½
PARAS:						
Smoked sheet ribbed	.48½ @	.45½	.54½ @	.50	.60 @	.55½
Upriver, fine	.42½ @	.41½	.58½ @	.55½	.60½ @	.56
Upriver, coarse	.31¾ @	.31½	.35 @	.34	.34½ @	.33½
Islands, fine	.42 @	.41	.49½ @	.47½	.49 @	.46
Islands, coarse	.20½ @	.20¼	.22½ @	.22	.24 @	.23
Cametá	.21¾ @	.21	.23 @	.21	.24 @	.23

[1]Figured only to March 26, 1920.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During March there has been a fair demand for paper from out-of-town banks, and early in the month the best names went at 6¾ to 7 per cent, but the latter part of the month the minimum rate has been 7 per cent, and considerable amounts of paper have been offered at 7½ per cent."

SINGAPORE RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [February 12, 1920]:

At the usual weekly rubber auctions held yesterday and to-day, prices showed slight declines from those of last week. Fine pale crêpe realized up to $1.12½ (two lots sold at $1.13½) or 1½ cents down, while ribbed smoked sheet sold at $1.13½ (three lots sold at $1.14) or ½-cent below last week's figure. The lower grades showed reductions of ¼-cent.

The quantity catalogd was 857 tons, of which 752 tons were offered and 527 tons sold.

The following is the course of values:	In Singapore, per Pound.[1]	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked	110½c @ 113½c	2/9½ @ 2/10⅜
Sheet, good ribbed smoked	105½ @ 110	2/7⅞ @ 2/ 9⅜
Crêpe, fine pale	109½ @ 112½	2/9⅝ @ 2/10½
Crêpe, good pale	106 @ 109	2/8¾ @ 2/ 9½
Crêpe, fine brown	99 @ 105	2/6¾ @ 2/ 8¼
Crêpe, good brown	95 @ 98½	2/5⅝ @ 2/ 6⅝
Crêpe, dark brown	86 @ 94½	2/3 @ 2/ 5½
Crêpe, bark brown	76 @ 85	2/0¼ @ 2/ 2¾

[1]Quoted in Straits Settlements currency—$1 = $0.567 United States currency.

AMSTERDAM MARKET REPORT.

JOOSTEN & JANSSEN, Amsterdam, report [March 12, 1920]:

The market remained quiet till the beginning of March, when it became very lively and a large business was done at rising prices. Practically all parcels in the auction catalog of inscriptions, postponed on account of the strike, were sold, as well as considerable quantities of rubber in port, but not unloaded.

The highest price paid for first quality *Hevea*, spot, was f. 1.46; the lower grades in proportion. There was a large turnover also in the terminal market, the highest price being f. 1.50 for July and August deliveries.

ANTWERP RUBBER MARKET.

GRISER & CO., Antwerp, report [March 5, 1920]:

At a rubber auction held in Antwerp on February 19, 1920, the first since November, 1919, 618 tons were sold out of 900 tons offered. A small lot of Congo plantation *Hevea* rubber brought 14.45 francs a kilo, while the Malayan plantation rubber put up in the same sale, brought from 14.30 to 14.40 a kilo, which seems to show that the Congo cultivated rubber, properly prepared, can hold its own with the Far Eastern product.

The highest prices obtained for other African varieties were:

	Francs per Kilo.
Upper Congo, equateur, black	8.82½
Upper Congo, Aruwimi	7.55 @ 8.52½
Kassai black	8.85
Kassai red Loanda II	5.97½
Wamba black	8.32½
Yakoma	8.10
Congo plantation *Hevea*	14.45
Straits Settlements smoked sheet	14.30 @14.40

The stock on hand in Antwerp is about 521 tons. The recent drop in prices was due to the fall in exchange, but the tone has grown steadier in the last few days. Business was brisker and sales amounting to 140,000 kilos were registered. Price at closing was 13.95.

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS and CAUCHO at NEW YORK

	Fine.	Medium.	Coarse.	Caucho.	Totals. Pounds.
FEBRUARY 25. By the S. S. *Bronte*, from Pará.					
Hagemeyer & Brunn	22,400	.....	.....	.....	22,400
Paul Bertuch	.....	.....	86,676	.....	86,676
Lazard Frères	93,100	.....	.....	.....	93,100
General Rubber Co	89,292	.....	.....	.....	89,292
Meyer & Brown, Inc	.....	239,740	80,184	4,300	324,224
H. A. Astlett & Co	90,800	.....	61,850	.....	152,650
Poel & Kelly	19,270	.....	.....	.....	19,270
FEBRUARY 26. By the S. S. *Michael*, from Pará.					
H. A. Astlett & Co	118,200	.....	130,300	216,600	465,100
Paul Bertuch	.....	.....	42,804	.....	42,804
Aldens' Successors, Inc	5,714	.....	5,293	28,293	39,300
Thornett & Fehr, Inc	1,011,604	.....	.....	.....	1,011,604
Hagemeyer & Brunn	224,000	.....	.....	15,000	239,000
MARCH 6. By the S. S. *Stephen*, from Pará.					
Poel & Kelly	48,600	.....	.....	.....	48,600
H. A. Astlett & Co	6,000	.....	.....	.....	6,000
P. Bertuch & Co	34,436	1,874	.....	11,124	47,434
William Schall & Co	119,937	.....	2,562	36,537	159,036
Neuss, Hesslein & Co	105,480	.....	30,000	.....	135,480
Thornett & Fehr, Inc	1,961,190	.....	.....	.....	1,961,190
MARCH 8. By the S. S. *Saint Michael*, from Pernambuco.					
Meyer & Brown, Inc	.....	52,370	34,760	.....	87,130
MARCH 12. By the S. S. *Manchurian Prince*, from Manaos and Pará.					
Hagemeyer & Co	26,463	.....	.....	.....	26,463
Poel & Kelly	74,299	.....	.....	.....	74,299
H. A. Astlett & Co	.....	.....	33,500	110,200	143,700
General Rubber Co	82,357	.....	.....	.....	82,357
Paul Bertuch	45,723	.....	88,728	10,864	145,315
Thornett & Fehr, Inc	869,220	.....	.....	.....	869,220
MARCH 19. By the S. S. *Biela*, from Pará.					
Paul Bertuch	.....	.....	.....	.....	301,680
Poel & Kelly	.....	.....	.....	.....	18,032
G. Amsinck & Co., Inc	.....	.....	.....	.....	12,642
H. A. Astlett & Co	.....	.....	822	.....	3,626
New York Overseas Co	.....	.....	.....	.....	64,288
MARCH 22. By the S. S. *Lake Gazette*, from Pará.					
Paul Bertuch	18,228	392	43,710	47,628	109,958
Various	.....	.....	13,406	.....	13,406

PLANTATIONS.

(Figured 180 pounds to the bale, or case.)

	Shipment from:	Shipped to:	Pounds.	Totals.
FEBRUARY 25. By the S. S. *Maasdijk*, at New York.				
Pablo Hermanos & Co	Rotterdam	New York	17,460	
Poel & Kelly	Rotterdam	New York	54,500	
Weise & Co	Rotterdam	New York	274,140	
Aldens' Successors, Inc.	Rotterdam	New York	42,343	
Meyer & Brown, Inc	Rotterdam	New York	28,000	416,443
FEBRUARY 25. By the S. S. *Kaiserin Augusta Victoria*, at New York.				
Rubber Trading Co	Liverpool	New York	18,000	
Poel & Kelly	Liverpool	New York	366,120	384,120
FEBRUARY 25. By the S. S. *Lowther Castle*, at New York.				
Hood Rubber Co	Singapore	Watertown	139,200	
Fred Stern & Co	Singapore	New York	436,800	
General Rubber Co	Singapore	New York	78,840	
F. R. Henderson & Co.	Singapore	New York	75,780	
Poel & Kelly	Singapore	New York	185,760	
Hadden & Co	Singapore	New York	43,500	
Balfour, Williamson & Co.	Singapore	New York	9,000	
L. Littlejohn & Co., Inc.	Singapore	New York	896,000	
The B. F. Goodrich Co.	Singapore	Akron	131,220	
Rubber Importers' & Dealers' Co., Inc	Singapore	New York	511,740	
Chas. T. Wilson Co., Inc.	Singapore	New York	87,800	
Robinson & Co	Singapore	New York	28,440	
Meyer & Brown, Inc	Singapore	New York	277,760	
Pell & Dumont, Inc	Singapore	New York	20,160	
The Goodyear Tire & Rubber Co	Singapore	Akron	993,960	
Various	Singapore	New York	1,070,820	4,986,760
FEBRUARY 26. By the S. S. *Ixion*, at Seattle.				
Fred Stern & Co	Singapore	Akron	224,000	224,000
FEBRUARY 26. By the S. S. *West Modus*, at New York.				
Kuharah Trading Co. Ltd.	Batavia	New York	307,520	
Gaston, Williams & Wigmore	Batavia	New York	62,640	
Winter, Ross & Co	Batavia	New York	83,700	
The Goodyear Tire & Rubber Co	Batavia	Akron	237,420	
Thornett & Fehr, Inc	Batavia	New York	19,800	
The Fisk Rubber Co	Batavia	Chicopee Falls	181,080	
The B. F. Goodrich Co.	Batavia	Akron	164,340	
J. T. Johnstone & Co., Inc.	Batavia	New York	50,580	
Poel & Kelly	Batavia	New York	18,000	
F. W. Frost & Co., Inc.	Batavia	New York	38,060	
L. Littlejohn & Co., Inc.	Java	New York	537,600	
Java - Holland - American Trading Co.	Singapore	New York	11,160	
Wilson, Holgate & Co., Ltd.	Singapore	New York	137,700	
Konig Bros. & Co	Singapore	New York	414,540	
G. Kawahara Co.	Singapore	New York	100,800	
Fred Stern & Co	Singapore	New York	404,400	
Rubber Trading Co	Singapore	New York	56,880	
Eastern Rubber Co	Singapore	New York	261,540	
Poel & Kelly	Singapore	New York	613,800	
Goldman, Sachs & Co	Singapore	New York	43,200	
W. R. Grace & Co	Singapore	New York	345,780	
Thornett & Fehr, Inc	Singapore	New York	21,780	
Mitsutichi, Goshi & Co	Singapore	New York	50,400	
Winter, Ross & Co	Singapore	New York	139,800	
Meyer & Brown, Inc	Singapore	New York	190,400	
Rubber Importers' & Dealers' Co., Inc	Singapore	New York	212,940	
L. Sutro & Co	Singapore	New York	16,920	
Francis Peek & Co	Singapore	New York	64,080	
Joosten & Janssen	Singapore	New York	32,940	
Various	Singapore	New York	1,200,240	6,020,040
FEBRUARY 26. By the S. S. *Tokiwa Maru*, at New York.				
Mitsui & Co., Ltd	Singapore	New York	40,320	
Pacific Trading Corp. of America	Singapore	New York	181,620	
L. Littlejohn & Co., Inc.	Singapore	New York	33,600	
Zuzuki & Co	Kobe	New York	88,020	
G. Kuwahara Co	Osaka	New York	192,960	
H. R. Lathrop & Co	Osaka	New York	18,000	
Various	Singapore	New York	168,180	722,700
FEBRUARY 26. By the S. S. *Sommersdijk*, at New York.				
L. Littlejohn & Co., Inc.	Java	New York	266,400	
L. Sutro & Co	Soerabaya	New York	30,600	
Mitsui & Co., Ltd	Soerabaya	New York	51,120	
United Malaysian Co	Soerabaya	New York	43,020	
General Rubber Co	Soerabaya	New York	628,200	
Manhattan Rubber Manufacturing Co.	Batavia	New York	46,440	
Mitsui & Co., Limited	Batavia	New York	142,020	
General Rubber Co	T'jong Priok	New York	196,740	
Poel & Kelly	T'jong Priok	New York	49,680	
L. Sutro & Co	T'jong Priok	New York	74,880	
Alden's Successors, Inc.	T'jong Priok	New York	66,439	
General Rubber Co	Deli	New York	72,000	
F. R. Henderson & Son.	Deli	New York	68,940	
Vernon Metal & Produce Co.	Deli	New York	109,620	
Various	Deli	New York	374,940	
Various	Soerabaya	New York	116,100	
Various	Batavia	New York	192,780	2,529,919
FEBRUARY 29. By the S. S. *Cedric*, at New York.				
Alden's Successors, Inc.	Liverpool	New York	8,402	8,402
MARCH 1. By the S. S. *Bengalis*, at San Francisco.				
L. Littlejohn & Co., Inc.	Java	San Francisco	160,220	160,220

	Shipment from:	Shipped to:	Pounds.	Totals.
MARCH. By the S. S. *Nanking*, at San Francisco.				
Hadden & Co.	Singapore	San Francisco	40,000	40,000
MARCH. By the S. S. *Colombia*, at San Francisco.				
Hadden & Co.	Singapore	San Francisco	40,000	40,000
MARCH. By the S. S. *Elkhorn*, at San Francisco.				
Hadden & Co.	Singapore	San Francisco	40,000	40,000
MARCH 1. By the S. S. *Wytheville*, at New York.				
Fred Stern & Co.	Singapore	New York	179,200	
Hood Rubber Co.	Singapore	Watertown	101,250	
Hadden & Co.	Singapore	New York	140,000	
L. Littlejohn & Co., Inc.	Singapore	New York	156,800	
Aldens' Successors, Inc.	Oran	New York	9,092	
Thornett & Fehr, Inc.	Singapore	New York	100,000	687,142
MARCH 1. By the S. S. *Muroran Maru*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	22,400	
General Rubber Co.	Singapore	New York	201,600	
United States Rubber Co.	Singapore	New York	201,600	
C. C. Trevanion & Co.	Singapore	Seattle	89,280	
Chas. T. Wilson Co., Inc.	Singapore	New York	35,640	
Poel & Kelly	Singapore	New York	247,500	
Thornett & Fehr, Inc.	Singapore	New York	33,600	831,620
MARCH 2. By the S. S. *Port Lincoln*, at New York.				
Poel & Kelly	London	New York	740,340	
General Rubber Company.	London	New York	421,200	
F. R. Downing & Co.	London	New York	131,580	
Goldman, Sachs & Co.	London	New York	1,440	
Chas. T. Wilson Co., Inc.			118,800	
Aldens' Successors, Inc.			1,969,628	
Various			45,000	3,427,988
MARCH 2. By the S. S. *Challenger*, at New York.				
T. D. Downing & Co.	London	New York	130,140	
Fred Stern & Co.	London	New York	3,223	133,363
MARCH 3. By the S. S. *Manoa*, at New York.				
Middleton & Co., Ltd.	Demerara	New York	2,235	2,235
MARCH 5. By the S. S. *Haleric*, at New York.				
Fred Stern & Co.	Colombo	New York	56,000	
L. Littlejohn & Co., Inc.	Singapore	New York	89,600	145,600
MARCH 6. By the S. S. *City of Shanghai*, at New York.				
General Rubber Company.	Colombo	New York	208,620	
Meyer & Brown, Inc.	Colombo	New York	280,000	
L. Littlejohn & Co., Inc.	Singapore	New York	60,250	
Various	Singapore	New York	2,390,020	2,938,890
MARCH 6. By the S. S. *Ruby*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	23,342	23,342
MARC 8. By the S. S. *West Harcuvar*, at New York.				
Thornett & Fehr, Inc.	London	New York	141,000	141,000
MARCH 9. By the S. S. *Mesaba*, at New York.				
T. D. Downing & Co.	London	New York	160,200	
General Rubber Co.	London	New York	354,520	
Mitsui & Co., Limited.	London	New York	203,940	
William Brandt's Sons.	London	New York	170,000	
Chas. T. Wilson Co., Inc.	London	New York	75,600	
Meyer & Brown, Inc.	London	New York	56,000	
L. Littlejohn & Co., Inc.	London	New York	35,318	
Thornett & Fehr, Inc.	London	New York	112,096	1,167,774
MARCH 9. By the S. S. *Choyo Maru*, at San Francisco.				
Various	Singapore	San Francisco	427,320	
Various	Batavia	San Francisco	359,640	
Various	Soerbaya	San Francisco	357,300	
Various	Nagaski	East. Cities	1,222,480	2,366,740
MARCH 9. By the S. S. *Edgemont*, at New York.				
W. R. Grace & Co.	London	New York	43,740	
T. D. Downing & Co.	London	New York	131,940	
Fred Stern & Co.	London	New York	146	
Meyer & Brown, Inc.	London	New York	22,400	
Various	London	New York	194,894	393,120
MARCH 10. By the S. S. *Vellavia*, at New York.				
General Rubber Co.	Liverpool	New York	2,160	
Poel & Kelly	Liverpool	New York	38,160	
F. R. Henderson	Liverpool	New York	22,500	
Chas. T. Wilson Co., Inc.	Liverpool	New York	58,140	
G. Harkinson & Co.	Liverpool	New York	9,900	
Various	Liverpool	New York	23,940	154,800
MARCH 13. By the S. S. *West Hepburn*, at San Francisco.				
F. R. Henderson & Co.		New York	430,920	
Firestone Tire & Rubber Co.	Singapore Singapore	Akron	779,580	1,210,500
MARCH 13. By the S. S. *Invincible*, at New York.				
Hecht, Lewis & Kahn	London	New York	109,800	109,800
MARCH 16. By the S. S. *Knight Templar*, at New York.				
Aldens' Successors, Inc.	Singapore	New York	21,060	
Fred Stern & Co.	Singapore	New York	280,000	
Thornett & Fehr, Inc.	Singapore	New York	322,380	
Wm. Symington & Co., Ltd.	Singapore	New York	8,020	
Edward Maurer Co., Inc.	Singapore	New York	299,500	
Rubber Trading Co.	Singapore	New York	49,500	
Meyer & Brown, Inc.	Singapore	New York	78,400	
L. Littlejohn & Co., Inc.	Singapore	New York	291,200	
Poel & Kelly	Singapore	New York	673,740	
F. R. Henderson & Co.	Singapore	New York	317,340	
Chas. T. Wilson Co., Inc.	Singapore	New York	27,000	
Thos. A. Desmond & Co.	Singapore	New York	145,980	
General Rubber Co.	Singapore	New York	634,500	
Winter, Ross & Co.	Singapore	New York	50,400	
Balfour, Williamson & Co.	Singapore	New York	94,860	
J. T. Johnstone & Co., Inc.	Singapore	New York	86,580	
The Fisk Rubber Co.	Singapore	Chicopee Falls	112,500	
Rubber Importers' and Dealers' Co., Inc.	Singapore	New York	175,860	
Raw Products Co.	Singapore	New York	69,120	
East Asiatic Co., Inc.	Singapore	New York	161,480	
The B. F. Goodrich Co.	Singapore	Akron	518,760	
Goldman, Sachs & Co.	Singapore	New York	91,800	
Various	Singapore	New York	1,149,840	
The Fisk Rubber Co.	Deli	Chicopee Falls	135,540	
Aldens' Successors, Inc.	Deli	Akron	102,420	
The B. F. Goodrich Co.	Deli	Akron	75,060	
Irwin, Harrisons & Crosfield, Inc.	Deli	New York	105,660	
The Goodyear Tire & Rubber Co.	Deli	Akron	119,340	
Firestone Tire & Rubber Co.	Deli	Akron	156,240	
Hood Rubber Co.	Deli	Watertown	108,000	
Edward Boustead & Co.	Penang	New York	66,240	
F. R. Henderson & Co.	Penang	New York	126,000	
Pacific Trading Corp. of America	Penang	New York	27,000	
Meyer & Brown, Inc.	Penang	New York	39,600	
William H. Stiles & Co.	Penang	New York	99,000	
Aldens' Successors, Inc.	Penang	New York	261,183	
Thornett & Fehr, Inc.	Penang	New York	10,080	
The B. F. Goodrich Co.	Penang	Akron	605,340	
The Goodyear Tire & Rubber Co.	Penang	Akron	39,240	
Various	Penang	New York	53,100	7,788,863
MARCH 17. By the S. S. *Volumnia*, at New York.				
Poel & Kelly	London	New York	819,540	
General Rubber Co.	London	New York	916,640	
Smith & Schippers, Inc.	London	New York	59,400	
Fred Stern & Co.	London	New York	208,331	
Aldens' Successors, Inc.	London	New York	787,598	
Thornett & Fehr, Inc.	London	New York	350,000	
Various	London	New York	894,349	4,035,858
MARCH 17. By the S. S. *Bardic*, at New York.				
Mitsui & Co., Ltd.	London	New York	54,720	
Thornett & Fehr, Inc.	London	New York	92,000	146,720
MARCH 19. By the S. S. *West Kaddoa*, at San Francisco.				
Various	Singapore	San Francisco	585,540	
Various	Penang	San Francisco	754,740	1,340,280
MARCH 22. By the S. S. *Atreus*, at New York.				
F. R. Henderson & Co.	Singapore	New York	457,920	
Adolph Hirsch & Co.	Singapore	New York	55,800	
Rogers-Pyatt Shellac Co.	Singapore	New York	72,540	
Frank Waterhouse & Co.	Singapore	New York	28,800	
American Trading Co.	Singapore	New York	30,060	
Thos. A. Desmond & Co.	Singapore	New York	99,720	
Aldens' Successors, Inc.	Singapore	New York	61,560	
Thornett & Fehr, Inc.	Singapore	New York	20,160	
Balfour, Williamson & Co.	Singapore	New York	293,760	
Chas. T. Wilson Co., Inc.	Singapore	New York	195,120	
L. Littlejohn & Co., Inc.	Singapore	New York	479,880	
Poel & Kelly	Singapore	New York	17,640	
Rubber Trading Co.	Singapore	New York	60,480	
Meyer & Brown, Inc.	Singapore	New York	83,700	
W. G. Ryckman, Inc.	Singapore	New York	28,800	
Edward Maurer Co., Inc.	Singapore	New York	216,000	
Pacific Trading Corp. of America	Singapore	New York	18,720	
General Rubbber Co.	Singapore	New York	2,063,700	
Hood Rubber Co.	Singapore	Watertown	100,800	
Fred Stern & Co.	Singapore	New York	10,080	
William H. Stiles & Co.	Singapore	New York	69,300	
The Goodyear Tire & Rubber Co.	Singapore	Akron	193,500	
Mitsui & Co., Ltd.	Singapore	New York	129,600	
Booth & Co.	Singapore	New York	9,180	
C. F. McPhillips	Singapore	New York	5,580	
L. Sutro & Co.	Singapore	New York	20,160	
Various	Singapore	New York	791,460	
The Fisk Rubber Co.	Deli	Chicopee Falls	210,420	
William H. Stiles & Co.	Deli	New York	110,340	
Fred Stern & Co.	Deli	New York	16,560	
L. Littlejohn & Co., Inc.	Deli	New York	12,240	
Firestone Tire & Rubber Co.	Deli	Akron	193,320	
The Goodyear Tire & Rubber Co.	Deli	Akron	129,600	
Various	Deli	New York	45,540	
Various	Penang	New York	384,840	6,716,880
MARCH 22. By the S. S. *Kawachi Maru*, at New York.				
Chas. T. Wilson Co., Inc.	Colombo	New York	88,560	
Meyer & Brown, Inc.	Colombo	New York	135,000	
Firestone Tire & Rubber Co.	Colombo	Akron	10,080	
Various	Colombo	New York	494,280	727,920
MARCH 22. By the S. S. *Trikieve*, at New York.				
Poel & Kelly	Colombo	New York	113,220	
Charles T. Wilson & Co. Inc.	Colombo	New York	45,000	
Kidder, Peabody & Co.	Colombo	New York	61,200	
Various	Colombo	New York	178,560	397,980

PLANTATIONS.—Continued.

	Shipment from:	Shipped to:	Pounds.	Totals.
MARCH 22. By the S. S. *Tokushima Maru*, at New York.				
Pacific Trading Corp. of America	Singapore	New York	247,680	
Thornett & Fehr, Inc.	Singapore	New York	87,480	
F. R. Henderson & Co.	Singapore	New York	50,400	
Mitsubiski Goshi Kaisha.	Singapore	New York	100,800	
Various	Singapore	New York	108,000	594,360
MARCH 22. By the S. S. *West Ekonk*, at New York.				
Various	Liverpool	New York	300	300
MARCH 22. By the S. S. *Haleric*, at New York.				
The Goodyear Tire & Rubber Co.	Colombo	Akron	90,000	
F .R. Henderson & Co.	Colombo	New York	57,780	
C. C. Trevanion & Co.	Colombo	New York	138,600	
Volkart Bros.	Colombo	New York	74,340	
Weise & Co.	Colombo	New York	25,020	
Poel & Kelly	Colombo	New York	41,940	
Chas. T. Wilson Co., Inc.	Colombo	New York	55,800	
Various	Colombo	New York	37,980	521,460
MARCH 22. By the S. S. *Oanfa*, at New York.				
Edward Boustead & Co.	Singapore	New York	166,140	
Aldens' Successors, Inc.	Singapore	New York	191,340	
Balfour, Williamson & Co.	Singapore	New York	226,980	
Robinson & Co.	Singapore	New York	28,800	
Thornett & Fehr, Inc.	Singapore	New York	134,460	
Rubber Trading Co.	Singapore	New York	100,800	
The Fisk Rubber Co.	Singapore	Chicopee Falls	221,940	
F. R. Henderson & Co.	Singapore	New York	901,900	
L. Littlejohn & Co., Inc.	Singapore	New York	672,120	
William H. Stiles & Co.	Singapore	New York	23,400	
Fred Stern & Co.	Singapore	New York	160,380	
W. G. Ryckman, Inc.	Singapore	New York	46,800	
Poel & Kelly	Singapore	New York	2,149,920	
Edward Maurer Co., Inc.	Singapore	New York	397,800	
Chas. T. Wilson Co., Inc.	Singapore	New York	286,200	
Mitsui & Co., Limited.	Singapore	New York	130,320	
Meyer & Brown, Inc.	Singapore	New York	94,500	
Thos. A. Desmond & Co.	Singapore	New York	338,400	
Hadden & Co.	Singapore	New York	115,200	
Boston Insulated Wire & Cable Co.	Singapore	Dorchester	5,400	
H. A. Forbes & Co.	Singapore	New York	22,320	
General Rubber Co.	Singapore	New York	2,374,920	
Robert Dollar Co.	Singapore	New York	110,520	
United Malaysian Rubber co., Ltd.	Singapore	New York	81,180	
W. T. Sargent & Sons.	Singapore	New York	33,660	
East Asiatic Co.	Singapore	New York	244,080	
The Goodyear Tire & Rubber Co.	Singapore	Akron	387,900	
Mitsubishi Goshi Kaisha	Singapore	New York	50,400	
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	59,940	
Pacific Trading Corp. of America	Singapore	New York	55,980	
Hood Rubber Co.	Singapore	Watertown	201,600	
Dunlop Tire & Rubber Co., Limited	Singapore	Toronto	42,660	
Various	Singapore	New York	867,240	
Norton, Lilly & Co.	Penang	New York	111,420	
Various	Penang	New York	24,840	
Various	Jeluk Anson	New York	35,100	
L. Littlejohn & Co., Inc.	Deli	New York	229,680	
Irwin-Harrison & Crosfield, Inc.	Deli	New York	157,500	
Balfour, Williamson & Co.	Deli	New York	18,000	
The Fisk Rubber Co.	Deli	Chicopee Falls	34,200	
L. Littlejohn & Co., Inc.	P't Sw't'nh'm	New York	460,800	
Meyer & Brown, Inc.	P't Sw't'nh'm	New York	9,000	
Various	P't Sw't'nh'm	New York	274,320	
Vernon Metal & Produce Co.	Deli	New York	59,940	
Poel & Kelly	Deli	New York	17,100	
F. R. Henderson & Co.	Deli	New York	27,360	
Aldens' Successors, Inc.	Deli	New York	126,000	
Fred Stern & Co.	Deli	New York	45,000	
General Rubber Co.	Deli	New York	6,480	
Firestone Tire & Rubber Co.	Deli	New York	83,880	
The Goodyear Tire & Rubber Co.	Deli	Akron	192,780	
Various	Deli	Akron	231,120	3,069,720

AFRICANS.

FEBRUARY 23. By the S. S. *Syria*, at New York.				
Various	Marseilles	New York	4,485	4,485
FEBRUARY 26. By the S. S. *Wabash*, at New York.				
Fred Stern & Co.	Bordeaux	New York	11,000	
Various		New York	108,915	119,915
MARCH 7. By the S. S. *Baltic*, at New York.				
Fred Stern & Co.	Liverpool	New York	7,799	7,799
MARCH 9. By the S. S. *Ruby*, at New York.				
Fred Stern & Co.	Marseilles	New York	22,868	
L. Littlejohn & Co., Inc.	Marseilles	New York	23,400	46,268
MARCH 11. By the S. S. *Vellavia*, at New York.				
Meyer & Brown, Inc.	Liverpool	New York	11,200	11,200
MARCH 12. By the S. S. *Frankinver*, at New York.				
Bers & Co.	Bordeaux	New York	16,740	16,740
MARCH 13. By the S. S. *Portuguese Prince*, at New York.				
Poel & Kelly	Havre	New York	42,205	42,205
MARCH 14. By the S. S. *Niagara*, at New York.				
Various	Bordeaux	New York	86,250	86,250
MARCH 15. By the S. S. *Ablanset*, at New York.				
Poel & Kelly	Lisbon	New York	537,640	537,640
MARCH 22. By the S. S. *Hatteras*, at New York.				
I. W. Elwell & Co.	Marseilles	New York	5,750	
Various	Marseilles	New York	4,800	10,550

BALATA.

MARCH 3. By the S. S. *Manoa*, at New York.				
Middleton & Co., Limited.	Demerara	New York	2,697	2,697
MARCH 5. By the S. S. *Gen. G. W. Goethals*, at New York.				
Heilbron, Wolff & Co.	Cristobal	New York	1,200	
A. N. Capen's Sons.	Cristobal	New York	900	2,100
MARCH 9. By the S. S. *Achilles*, at New York.				
Middleton & Co.	Paramaribo	New York	5,000	5,000
MARCH 17. By the S. S. *Volumnia*, at New York.				
Earle Bros.	London	New York	4,500	4,500
MARCH 19. By the S. S. *Corillo*, at New York.				
G. Aminsck & Co., Inc.	Pt. Colombia	New York	4,312	4,312
MARCH 22. By the S. S. *West Ekonk*, at New York.				
Earle Bros.	Liverpool	New York	5,700	5,700

CENTRALS.

FEBRUARY 24. By the S. S. *Lysefjord*, at New York.				
Wm. Scholl & Co.	Curaçao	New York	5,100	5,100
FEBRUARY 24. By the S. S. *Monterey*, at New York.				
The Sleeper Trading Co.	Mexico	New York	900	900
MARCH 5. By the S. S. *Gen. G. W. Goethals*, at New York.				
Pablo, Calvet & Co.	Cristobal	New York	22,050	
Mecke & Co.	Cristobal	New York	7,350	
Ultramares Corp.	Cristobal	New York	4,650	
Heilbron, Wolff & Co.	Cristobal	New York	1,350	
Wellman, Peck & Co.	Cristobal	New York	1,800	
A. N. Capen's Sons.	Cristobal	New York	1,650	
Dumarest Bros.	Cristobal	New York	1,350	
G. Amsinck & Co., Inc.	Cristobal	New York	300	
William Scholl & Co.	Cristobal	New York	1,050	41,550
MARCH 8. By the S. S. *Colon*, at New York.				
Isaac Brandon & Bros.	Panama	New York	2,500	2,500
MARCH 9. By the S. S. *Cherokee*.				
E. Echaranna & Co.	Cartagena	New York	4,860	4,860

PONTIANAK.

FEBRUARY 26. By the S. S. *West Modus*, at New York.				
Latham & Co.	Singapore	New York	30,000	30,000
FEBRUARY 26. By the S. S. *Sommersdijk*, at New York.				
United Malaysian Rubber Co.	Soerabaya	New York	20,100	
E. Everett Carlton & Co.	Soerabaya	New York	41,100	61,200
MARCH 16. By the S. S. *Knight Templar*, at New York.				
Meyer & Brown, Inc.	Singapore	New York	123,000	
United Malaysian Rubber Co., Limited.	Singapore	New York	100,899	
H. W. Peabody & Co.	Singapore	New York	182,100	
Various	Singapore	New York	209,100	615,099
MARCH 22. By the S. S. *Atreus*, at New York.				
United Malaysian Rubber Co., Limited	Singapore	New York	45,600	
Various	Singapore	New York	75,900	121,500
MARCH 22. By the S. S. *Oanfa*, at New York.				
United Malaysian Rubber Co., Limited	Singapore	New York	286,500	
Various	Singapore	New York	222,000	508,500

GUAYULE.

MARCH 19. By rail at Eagle Pass, Texas.				
Continental-Mexican Rubber Co., Limited.	Mexico	New York	99,000	99,000

GUTTA SIAK.

FEBRUARY 26. By the S. S. *Louther Castle*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	111,960	111,960
MARCH 16. By the S. S. *Knight Templar*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	74,700	
United Malaysian Rubber Co.	Singapore	New York	8,847	83,547
MARCH 22. By the S. S. *Oanfa*, at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	50,100	50,100

ANTWERP RUBBER ARRIVALS.

FEBRUARY 21. By the S. S. *Albertville*, from the Congo.

Bungé et Cie	*kilos*	15,131
Bungé et Cie (Forminière)		650
Bungé et Cie (Intertropical)		6,410
Bungé et Cie (Compagnie du Kassai)		2,900
Bungé et Cie (Grands Lacs)		3,393
Bungé et Cie (Crédit Colonial et Commercial)		37,175
Bungé et Cie (Belgika)		8,090
Société Coloniale Anversoise (Chemins de fer du Haut Congo)		10,200
Various		2,675
Total	*kilos*	86,624

(Compiled by Grisar & Co., Antwerp.)

UNITED STATES CRUDE RUBBER IMPORTS FOR 1920 (BY MONTHS).

1920.	Plantations.	Paras.	Africans.	Centrals.	Guayule.	Manicoba and Matto Grosso.	Total for 1920.	Total for 1919.
January ....*tons*	17,799	2,620	821	111	...	...	21,351	7,235
February	29,681	2,456	558	265	34	...	32,994	17,456
Totals	47,480	5,076	1,379	376	34	...	54,345	24,691

(Compiled by The Rubber Association of America, Inc.)

CEYLON RUBBER IMPORTS AND EXPORTS.

IMPORTS.

	January 1 to February 2.	
	1919.	1920.
Crude rubber:		
From Straits Settlements.....*pounds*	.....	385,000
India	175,811	131,690
Burma and other countries.....	.....	6,300
Totals	175,811	522,990

EXPORTS.

Crude Rubber:		
To United Kingdom.....*pounds*	2,537,653	2,713,333
Belgium	.....	18,360
France	.....	11,200
United States	3,512,642	1,492,886
Canada	.....	257,000
India	290	.....
Straits Settlements	424	.....
Japan	11,200	52
Totals	6,062,209	4,493,431

(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

	December.		Twelve Months Ended December 31.	
	1918.	1919.	1918.	1919.
To Netherlands .....*kilos*	.....	325,000	.....	2,970,000
Great Britain	.....	190,000	1,659,000	7,223,000
France	.....	.....	.....	215,000
Sweden	.....	25,000	.....	25,000
United States	1,045,000	2,225,000	6,555,000	18,767,000
Singapore	373,000	357,000	7,551,000	5,465,000
Japan	14,000	.....	721,000	183,000
Australia	127,000	.....	723,000	245,000
Other countries	.....	.....	94,000	169,000
Totals	1,559,000	3,122,000	17,303,000	35,262,000
Ports of origin:				
Tandjong Priok	881,000	2,145,000	9,212,000	18,512,000
Samarang	14,000	58,000	146,000	562,000
Soerabaya	549,000	914,000	7,506,000	15,000,000
Probolinggo	.....	6,000	.....	6,000
Cheribon	.....	.....	.....	7,000
Tjilatjap	.....	.....	.....	235,000

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram from Singapore states that the exports of plantation rubber from the ports of the Straits Settlements amounted to 13,125 tons in the month of January, compared with 14,214 tons in December last. Comparative statistics follow:

	1918.	1919.	1920.
January .....*tons*	4,302	14,404	13,125

Transhipments for the month of January amounted to 1,278 tons.

FEDERATED MALAY STATES RUBBER EXPORTS.

A cablegram from Kuala Lumpur reports that 11,119 tons of plantation rubber were exported from the Federated Malay States in the month of January. This compares with 10,340 tons in December last. Comparative statistics follow:

	1918.	1919.	1920.
January .....*tons*	7,588	7,163	11,119

EXPORTS OF CRUDE RUBBER FROM BELAWAN (DELI), SUMATRA.

	October.		Ten Months Ended October 31.	
	1918.	1919.	1918.	1919.
To Netherlands....*pounds*	.....	964,445	.....	4,424,119
Great Britain.....	126,379	594,645	3,234,358	7,997,196
Italy	.....	.....	.....	134,464
United States.....	.....	1,932,064	6,229,714	16,241,507
Canada	.....	.....	132,088	.....
British India.....	.....	.....	329,846	.....
Japan	.....	.....	.....	2,156
Australia	.....	.....	.....	404,778
Penang	4,400	78,355	338,059	891,977
Singapore	1,757,362	2,341,009	13,591,239	19,092,443
Hongkong	.....	192,958	.....	366,318
Totals	1,881,141	6,103,476	23,855,184	49,554,958

MALAYAN RUBBER EXPORTS FOR DECEMBER, 1919.

From	Penang.	Singapore.	Port Swet'nh'm.	Malacca.	Totals.
To Great Britain..*pounds*	3,244,836	658,267	3,072,117	319,157	7,294,377
Rest of Europe.....	.....	.....	42,455	.....	42,455
United States, Pacific ports	1,365,285	5,164,800	.....	.....	6,530,084
New York	1,932,980	16,223,333	60,034	.....	18,216,348
Canada	.....	262,533	.....	.....	262,533
Colombo	81,320	.....	209,723	.....	291,043
Japan	.....	322,933	.....	.....	322,933
Totals	6,624,421	22,631,866	3,384,328	319,157	32,959,773

(Compiled by Aldens' Successors (Eastern), Limited, Penang.)

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JANUARY, 1920.*

	NEW YORK.				
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Totals.
Stowell & Co.....*kilos*	112,859	8,805	21,368	8,305	151,337
General Rubber Co. of Brazil..	85,626	6,173	3,500	701	96,000
Ohliger & Co.....	72,535	8,321	6,480	6,241	93,577
Tancredo, Porto & Co.....	.....	10,200	19,831	45,961	75,992
A. Souza	1,044	63	28,462	31,249	60,818
Y. A. Mendes & Co.....	.....	7,090	8,630	26,762	42,482
Moraes Carneiro & Co.....	7,680	3,518	752	.....	11,950
Amorim Yrmãoz	.....	2,240	2,980	480	5,700
Semper & Co.....	3,345	640	1,080	420	5,485
Adelbert H. Alden, Limited...	170	133	3,562	956	4,821
Archer Pinto & Co.....	1,571	116	1,327	46	3,060
Total Manáos	284,830	47,299	97,972	121,121	551,222
In transit, Iquitos.....	67,063	216,359	25,196	14,780	323,398
Totals	351,893	263,658	123,168	135,901	874,620

There were no exports to Europe.
(Compiled by Stowell & Co., Manáos, Brazil.)

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING JANUARY, 1920.*

	NEW YORK.				
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Totals.
J. Marques .....*kilos*	116,375	13,403	92,377	22,584	244,739
Stowell & Co.....	136,975	15,921	52,027	35,060	239,983
Alfredo Valle & Co.....	78,975	2,949	39,002	53,456	174,382
Chamié & Koury, Limited....	70,681	2,647	40,882	27,695	141,905
General Rubber Co.....	68,632	4,949	42,684	2,208	118,473
Berringer & Co.....	75,551	5,166	35,351	995	117,063
Suarez Filho & Co.....	72,212	.....	2,655	2,100	76,968
Bitar Irmãos	680	160	6,930	1,600	9,370
Sundries	13,218	680	16,880	1,440	32,218
	633,299	45,875	328,788	147,139	1,155,101
From Itacoatiara	37,392	2,950	17,197	767	58,306
From Manãos	407,897	79,080	157,189	167,168	811,334
From Iquitos	724,256	11,144	55,888	29,374	820,662
	1,802,844	139,049	559,062	344,448	2,845,403

*There were no exports to Europe.
(Compiled by Stowell & Co., Pará, Brazil.)

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, ITACOATIARA, MANAOS AND IQUITOS DURING 1919

	EUROPE.					NEW YORK.					Other Brazilian	GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	ports.	TOTALS.
J. Marques .....*kilos*	1,095,804	3,377	.....	.....	1,099,181	879,173	187,025	889,016	351,865	2,307,079	4,166	3,410,426
Stowell & Co.....	905,497	33,119	91,666	271,240	1,301,522	967,977	179,753	586,182	315,981	2,049,893	.....	3,351,415
Bank of Brazil.....	.....	.....	.....	.....	.....	2,457,750	72,046	27,665	.....	2,557,641	.....	2,557,461
Suarez, Filho & Co.....	172,257	.....	.....	75,864	248,121	1,110,477	1,827	272,279	610,330	1,994,913	.....	2,243,034
General Rubber Co. of Brazil	274,121	18,636	13,235	31,159	337,151	783,486	78,961	412,377	311,431	1,586,255	.....	1,923,406
Chamié & Koury, Limited...	.....	.....	5,280	26,250	31,530	588,990	56,776	384,844	455,487	1,486,097	.....	1,517,627
Bitar Irmãos	54,341	3,989	4,090	154,063	216,483	220,620	54,301	161,348	295,744	732,013	.....	948,496
Alfredo Valle & Co.....	145,847	15,424	15,734	98,001	273,006	304,399	36,869	200,549	74,238	652,055	.....	925,061
Berringer & Co.....	.....	.....	.....	.....	.....	611,538	29,351	119,857	129,161	889,907	.....	889,907
Adelbert H. Alden, Limited.	383,755	.....	13,198	10,142	407,095	113,889	55,051	181,681	68,498	419,119	.....	826,214
Sundries	304,627	8,045	30,570	83,920	427,162	757,079	55,215	319,389	887,523	2,019,206	.....	2,446,368
Exports from Pará	3,334,249	82,590	173,773	750,639	4,341,251	8,831,378	807,175	3,555,187	3,500,258	16,693,998	4,166	21,039,415
Exports from Itacoatiara ..	39,430	180	2,380	5,130	47,120	40,076	3,930	10,139	124	54,269	.....	101,389
Exports from Manãos	4,710,369	345,139	276,347	626,714	5,958,569	4,119,375	915,155	1,722,078	2,594,781	9,351,389	.....	15,309,958
Exports from Iquitos	302,364	9,270	47,097	271,198	629,929	1,079,606	75,626	354,317	713,248	2,222,797	.....	2,852,726
Totals	8,386,412	437,179	499,597	1,653,681	10,976,869	14,070,435	1,801,886	5,641,721	6,808,411	28,322,543	4,166	39,303,488

(Compiled by J. Marques, Pará, Brazil.)

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF JANUARY, 1920.

EXPORTED TO—	Belting.	Hose.	Packing.	Boots.		Shoes.		Soles and Heels.	Automobile Tires.				Insulated Wire and Cables.	All Other Manufactures of Rubber.	Totals.
				Pairs.	Value.	Pairs.	Value.		Casings.	Inner Tubes.	Solid Tires.	All Others.			
EUROPE:	Value.	Value.	Value.					Value.	Value.	Value.	Value.	Value.	Value.	Value.	Value.
Austria	.....	.....	.....	.....	.....	.....	.....	.....	$4,300	.....	.....	.....	.....	.....	$4,300
Azores and Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	285	.....	.....	.....	.....	.....	285
Belgium	.....	.....	$293	.....	.....	6,961	$4,565	.....	123,114	$3,229	$3,108	$2,096	$670	$11,324	148,399
Bulgaria	.....	.....	.....	.....	.....	1,320	1,300	.....	.....	.....	.....	.....	.....	.....	1,300
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	275	275
Denmark	.....	.....	.....	6,792	$13,526	68,505	46,891	.....	130,734	3,202	.....	7,610	1,541	13,314	216,818
Finland	.....	.....	.....	.....	.....	66,106	57,173	$138	22,402	176	.....	.....	9,585	38	89,515
France	$1,042	$123	101	162	1,005	99,701	68,338	.....	346,817	1,648	.....	2,704	2,764	70,858	495,400
Germany	.....	.....	.....	.....	.....	60	70	.....	498	.....	.....	.....	50	350	968
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	98	.....	.....	.....	.....	.....	98
Greece	.....	.....	.....	.....	.....	9,168	8,563	567	28,770	322	.....	898	4,303	823	44,246
Italy	.....	.....	.....	3	35	1,008	1,008	.....	45,998	.....	.....	9,296	67,343	1,612	125,292
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	75	.....	.....	.....	.....	.....	75
Netherlands	2,210	200	64	.....	.....	27,049	26,768	.....	89,443	2,103	.....	4,337	16,030	14,494	155,649
Norway	.....	3,058	.....	9,379	53,404	181,483	161,448	283	93,859	457	.....	435	191,037	21,748	525,729
Poland and Danzig	.....	.....	.....	30	120	2,113	1,723	.....	1,531	.....	.....	.....	.....	.....	3,374
Portugal	.....	.....	.....	.....	.....	1,432	1,100	.....	109,356	1,627	.....	1,454	2,500	812	116,849
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	78,515	2,788	.....	.....	.....	.....	81,303
Russia in Europe	2,340	.....	.....	.....	.....	.....	.....	.....	1,750	.....	.....	.....	.....	15	4,105
Spain	308	52	.....	.....	.....	2,228	1,975	.....	107,004	.....	.....	1,113	5,118	2,014	117,584
Sweden	11,248	210	1,000	276	601	69,889	54,080	1,232	306,231	9,399	25	9,148	14,641	29,394	437,209
Switzerland	4,250	.....	.....	.....	.....	5,046	3,686	.....	163,748	.....	.....	15,197	792	1,825	189,498
Turkey in Europe	.....	.....	.....	4,068	12,871	290,207	434,861	155	65,753	.....	.....	385	.....	2,063	516,088
England	9,723	23,906	.....	3,244	7,887	150,529	122,640	3,281	61,934	292	16,359	13,970	17,775	117,736	395,503
Scotland	322	.....	.....	.....	.....	5,116	4,252	.....	.....	.....	.....	4,500	.....	301	9,375
TOTALS, EUROPE	$31,443	$27,549	$1,458	23,954	$89,449	987,921	$1,000,441	$5,656	$1,782,215	$25,246	$19,492	$73,143	$334,149	$288,996	$3,679,237
NORTH AMERICA:															
Bermuda	.....	$75	.....	18	$54	.....	.....	.....	.....	.....	.....	.....	410	$15	$554
British Honduras	$161	191	$5	.....	.....	3,358	$3,726	$201	$323	$145	.....	$368	53	41	5,214
Canada	13,837	8,582	16,675	4,792	19,888	2,999	4,961	604	180,454	16,107	$41,454	1,565	20,351	170,974	495,452
Costa Rica	183	100	5	.....	.....	.....	.....	456	1,343	.....	.....	92	245	345	2,769
Guatemala	784	261	.....	96	133	864	1,272	.....	2,212	220	.....	.....	1,294	1,541	7,717
Honduras	168	770	156	.....	.....	24	60	.....	1,775	19	91	.....	540	1,647	5,226
Nicaragua	2,580	.....	259	.....	.....	173	174	128	1,683	.....	.....	.....	2,024	3,639	10,487
Panama	395	728	3,353	15	45	3,200	3,446	349	20,869	59	.....	1,947	4,942	2,554	38,687
Salvador	245	14	.....	.....	.....	.....	.....	12	545	30	.....	171	155	660	1,832
Mexico	21,480	9,385	5,259	82	198	2,308	2,486	1,579	39,530	5,998	3,931	2,453	22,930	12,194	127,423
Miquelon, Langley, etc	.....	.....	.....	73	160	60	47	.....	.....	.....	.....	.....	.....	10	217
Newfoundland and Labrador	885	524	218	10,063	30,076	1,464	1,825	1,499	170	293	.....	.....	1,239	1,118	37,847
Barbados	.....	23	.....	.....	.....	216	212	31	2,616	61	.....	97	249	241	3,530
Jamaica	47	165	1,841	.....	.....	24	34	1,163	30,856	994	.....	54	3,490	241	38,885
Trinidad and Tobago	494	305	44	.....	.....	.....	.....	.....	3,868	88	.....	21	143	275	5,238
Other British West Indies	306	75	.....	12	48	12	16	.....	2,304	250	.....	159	268	166	3,592
Cuba	14,276	11,653	6,316	1	8	75,395	58,776	3,982	160,960	10,658	7,739	23,617	30,551	18,525	347,061
Danish West Indies	.....	5	.....	.....	.....	1,443	1,660	.....	1,749	47	.....	.....	.....	154	3,615
Dutch West Indies	.....	.....	.....	.....	.....	.....	.....	214	980	.....	.....	12	30	.....	1,236
French West Indies	.....	.....	53	.....	.....	.....	.....	.....	15,834	25	.....	290	56	88	16,346
Haiti	234	426	.....	.....	.....	1	1	37	2,785	48	.....	1,302	175	301	5,329
Dominican Republic	517	12	.....	.....	.....	2,020	1,243	579	10,275	.....	647	111	1,350	1,990	16,724
TOTALS, NORTH AMERICA	$56,612	$33,294	$34,184	15,152	$50,610	93,561	$79,939	$10,834	$481,131	$35,042	$53,862	$32,259	$90,495	$216,719	$1,174,981
SOUTH AMERICA:															
Argentina	$8,861	$2,340	$128	24	$120	1,116	$1,873	.....	$138,197	$1,635	.....	$870	$44,112	$18,337	$216,473
Bolivia	401	55	.....	.....	.....	.....	.....	.....	4,645	.....	.....	.....	20,071	739	25,911
Brazil	10,325	3,909	1,137	.....	.....	4,435	4,026	$1,432	60,576	3,384	.....	267	40,410	16,927	142,393
Chile	14,471	1,811	157	96	607	4,296	5,076	367	52,912	871	.....	4,162	3,995	7,835	92 264
Colombia	1,273	458	269	.....	.....	216	133	326	8,447	483	.....	2,528	5,350	1,436	20,703
Ecuador	1,744	80	170	4	13	2,416	1,775	.....	5,324	.....	.....	.....	710	2,087	11,903
British Guiana	85	60	.....	.....	.....	.....	.....	.....	2,839	850	.....	.....	283	18	4,135
Dutch Guiana	62	.....	.....	.....	.....	.....	.....	.....	257	.....	.....	11	.....	97	427
Paraguay	246	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	.....	326
Peru	1,757	1,413	2,539	.....	.....	208	251	.....	20,266	378	$1,839	39	6,322	2,047	36,851
Uruguay	286	1,552	516	.....	.....	864	463	.....	47,773	2,116	.....	.....	5,636	8,155	66,497
Venezuela	2,281	159	264	.....	.....	6	3	53	11,838	50	.....	739	9,129	2,111	26,627
TOTALS, SOUTH AMERICA	$41,792	$11,837	$5,180	124	$740	13,557	$13,600	$2,178	$353,074	$9,767	$1,839	$8,616	$136,098	$59,789	$644,510
OCEANIA:															
Australia	$2,727	$4,825	$1,637	288	$979	347	$653	$15	$41,207	$3,863	.....	$1,038	$10,082	$4,465	$71,431
New Zealand	.....	505	.....	36	141	66	95	.....	48,255	475	$368	1,068	572	11,111	62,590
French Oceania	.....	.....	.....	.....	.....	.....	.....	.....	65	.....	200	.....	.....	.....	265
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	204	15	.....	.....	.....	.....	219
Philippine Islands	31,163	6,387	5,920	.....	.....	5,616	7,162	11,756	131,397	14,312	18,696	9,457	13,708	7,444	257,402
TOTALS, OCEANIA	$33,890	$11,717	$7,557	224	$1,120	6,029	$7,910	$11,771	$221,128	$18,605	$19,264	$11,563	$24,362	$23,020	$391,907

EXPORTED TO—	Belting. Value.	Hose. Value.	Packing. Value.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Soles and Heels. Value.	Automobile Tires. Casings. Value.	Automobile Tires. Inner Tubes. Value.	Automobile Tires. Solid Tires. Value.	All Others. Value.	Insulated Wire and Cables. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
ASIA:															
China	$3,842	$5,355	$545	2,393	$6,282	12,737	$14,426	$250	$36,603	$340	.....	$1,105	$34,100	$6,943	$109,791
Kwantung	.....	.....	.....	.....	.....	49,460	58,865	.....	.....	.....	.....	.....	.....	.....	58,865
Chosen	278	.....	.....	.....	.....	.....	586	.....	.....	.....	.....	.....	.....	86	950
British India	120	.....	19	.....	.....	552	552	.....	.....	.....	.....	.....	.....	424	26,965
Straits Settlements	854	.....	.....	.....	.....	1,475	2,007	.....	23,581	222	.....	.....	592	5,494	85,705
Other British East Indies	.....	75	.....	.....	.....	788	751	.....	62,097	458	$15,311	.....	.....	5	171
British East Indies	685	3,945	627	.....	.....	.....	.....	.....	56,717	1,075	3,835	327	9,476	7,315	84,002
French East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	56
Hongkong	9	.....	160	.....	.....	384	263	36	1,225	.....	.....	.....	11,404	1,297	14,894
Japan	31,531	854	.....	366	1,148	28,316	21,538	.....	11,897	1,542	8,366	.....	13,753	27,256	117,885
Russia in Asia	.....	.....	.....	39	120	.....	.....	.....	.....	.....	.....	.....	.....	165	285
Siam	.....	.....	.....	1	5	.....	.....	.....	3,675	.....	.....	.....	.....	849	4,529
Turkey in Asia	.....	.....	.....	.....	.....	1,386	1,049	.....	9,494	.....	.....	.....	.....	4,038	14,581
TOTALS, ASIA	$37,319	$10,229	$1,351	2,799	$7,555	95,098	99,485	$286	$205,955	$3,637	$27,512	$1,432	$69,990	$53,928	$518,679
AFRICA:															
British West Africa	.....	.....	.....	88	$454	68	$77	$4	$33,662	$23	.....	131	.....	.....	34,351
British South Africa	$12,199	.....	.....	.....	.....	413	506	.....	4,627	.....	.....	698	6,558	22,240	46,828
British East Africa	.....	.....	.....	.....	.....	.....	.....	.....	7,453	.....	.....	.....	.....	.....	7,453
French Africa	.....	$100	$500	.....	.....	.....	.....	.....	917	.....	.....	.....	.....	90	1,607
Madagascar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67	.....	.....	67
Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3
Egypt	524	.....	.....	.....	.....	589	248	.....	762	.....	.....	10	190	105	1,839
TOTALS, AFRICA	$12,723	$100	$500	88	$454	1,070	$831	$4	$47,421	$23	.....	$906	$6,748	$22,438	$92,148
TOTALS	$50,230			42,441	$149,928	1,197,236	$1,202,206	$30,729	$3,090,924	$92,320	$121,969	$127,919	$661,842	$664,899	$6,501,462

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORY OF THE UNITED STATES.

	Belting, Hose, and Packing.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires. Automobile Value.	Tires. All Others. Value.	Insulated Wire and Cables. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
Hawaii	$9,305	.....	.....	$145,074	$5,766	.....	$8,905	$168,990
Porto Rico	4,751	.....	.....	157,885	20,171	.....	13,957	196,764
TOTALS	$14,056	.....	.....	$302,959	$25,877	.....	$22,862	$365,754

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

January.

	1919. Pounds.	1919. Value.	1920. Pounds.	1920. Value.
UNMANUFACTURED—*free:*				
India rubber:				
From France	.....	.....	490,968	$198,476
Netherlands	.....	.....	1,522,588	722,320
Portugal	.....	.....	67,461	33,730
United Kingdom	11,200	$4,480	17,104,210	8,024,335
Canada	8,995	2,655	2,585	1,034
Central America	28,887	8,271	28,376	8,971
Mexico	215,774	56,307	130,655	54,167
Brazil	5,354,280	1,892,068	4,233,199	1,405,944
Peru	.....	.....	176,721	65,118
Other South America	43,681	21,907	275,256	85,769
British E. Indies	13,253,693	4,725,854	35,167,439	14,215,918
Dutch E. Indies	2,975,168	980,835	6,171,319	2,684,769
Other countries	1,147,531	327,935	1,056,638	466,677
Totals	23,039,209	$8,020,312	66,427,415	27,967,228
Balata	56,132	28,333	494,604	292,294
Guayule	121,101	37,138	.....	.....
Jelutong (Pontianak)	.....	.....	1,215,892	172,049
Gutta percha	423,567	51,777	816,999	133,742
Rubber scrap	397,290	29,656	981,719	82,406
Totals unmanufactured	24,037,299	$8,167,216	69,936,629	$28,647,719
Chicle (dutiable)	876,422	$530,646	1,203,546	$895,678
MANUFACTURED—*dutiable:*				
India rubber and gutta-percha	.....	26,688	.....	67,949
India rubber substitutes	179,200	31,506	4	5

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
India rubber:				
Scrap and old	358,683	$36,198	1,315,632	$122,514
Reclaimed	492,147	89,539	385,979	62,956
Belting[1]	.....	623,636	.....	213,799
Hose[1]	.....		.....	94,726
Packing[1]	.....		.....	50,230
Boots[2] *pairs*	11,014	37,316	42,441	149,928
Shoes[1] *pairs*	130,513	104,217	1,197,236	1,202,206
Soles and heels[1]	.....	.....	.....	30,729
Tires:				
For automobiles[1]	.....	1,839,619	.....	.....
Casings[1]	.....		.....	3,090,924
Inner tubes[1]	.....		.....	92,320
Solid tires[1]	.....		.....	121,969
All other tires[1]	.....	105,503	.....	127,919
Druggists' rubber sundries	.....	88,459	.....	90,145
Suspenders and garters	.....	208,965	.....	222,030
Other rubber manufactures[1]	.....	686,483	.....	664,890
Totals	.....	$3,819,935	.....	$6,337,285
Fountain pens....*number*	16,647	14,209	35,907	37,472
Chewing gum	.....	270,864	.....	330,536
Insulated wire and cables[1]	.....	804,481	.....	661,842

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	191,740	$93,009	563,677	$247,992
Balata	51,350	31,844	54,958	32,698
Guayule	.....	.....	.....	.....
Jelutong (Pontianak)	.....	.....	110,000	18,568
Totals, unmanufactured	243,090	$124,853	728,635	$299,258
MANUFACTURED—				
Gutta percha	.....	$237	.....	$115
Totals, manufactured	.....	$237	.....	$115
Chicle	44,000	$20,000	.....	.....

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose and packing	.....	$14,749	.....	$5,114
Boots and shoes...*pairs*	2,074	6,035	.....	9,934
Other rubber goods	.....	1,220	.....	2,633
Totals	.....	$22,004	.....	$17,681
To Hawaii:				
Belting, hose and packing	.....	$4,739	.....	$9,305
Automobile tires	.....	112,980	.....	145,074
Other tires	.....	1,359	.....	5,706
Other rubber goods	.....	11,935	.....	8,905
Totals	.....	$131,013	.....	$168,990
To Porto Rico:				
Belting, hose and packing	.....	$5,478	.....	$4,751
Automobile tires	.....	66,624	.....	157,885
Other tires	.....	3,770	.....	20,171
Other rubber goods	.....	20,253	.....	13,957
Totals	.....	$96,125	.....	$196,764

To Philippine Islands—treated as foreign commerce.

[1]Details of exports of domestic merchandise by countries during January are given on pages 470-471 of this issue.

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

December.

	1918.		1919.	
UNMANUFACTURED—*free:*	Pounds.	Value.	Pounds.	Value.
Rubber, gutta percha, etc.:				
From United Kingdom	279	$299	702,539	$381,687
United States	73,893	37,915	1,065,886	567,667
British East Indies:				
Ceylon	.....	.....	452,529	281,730
Straits Settlements	1,128,776	330,539	329,491	180,089
Dutch East Indies	99,400	45,853	.....	.....
Other countries	1,105	388	.....	.....
Totals	1,303,453	$414,994	2,550,445	$1,411,173
Rubber, recovered	214,103	$35,618	352,234	$41,429
Hard rubber, sheets and rods	1,101	96	16,092	9,411
Hard rubber tubes	.....	793	.....	4,939
Rubber, powdered, and rubber or gutta percha scrap	315,525	26,233	141,297	8,831
Rubber thread, not covered	4,300	6,353	2,589	3,861
Rubber substitute	224,201	23,529	108,502	14,073
Totals, unmanufactured	759,230	$93,522	620,714	$82,544
Balata	.....	.....	43	$63
Chicle	95,850	$58,731	310,636	260,299
MANUFACTURED—*dutiable:*				
Boots and shoes	.....	$8,995	.....	$16,795
Waterproofed clothing	.....	5,706	.....	20,007
Belting, hose and packing	.....	22,382	.....	39,243
Gloves and hot-water bottles	.....	(*)	.....	7,967
Fountain pens	.....	.....	(†)	6,525
Tires	.....	32,471	.....	113,734
Insulated wire and cables:				
Wire and cables, covered with cotton, linen, silk, rubber, etc.	.....	11,195	.....	11,333
as above	.....	(‡)	.....	10,011
Other manufactures	.....	124,356	.....	194,269
Totals, manufactured	.....	$205,105	.....	$419,884

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

November.

	1918.		1919.	
UNMANUFACTURED—	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
Crude and waste rubber	$28,319	.....	$26,792	.....
MANUFACTURED—				
Belting	1,405	.....	663	.....
Hose	12,955	.....	17,740	.....
Boots and shoes	63,578	1,597	235,291	686
Clothing	577	15	6,056	.....
Tires	257,379	2,788	838,286	1,675
All other—n. o. p.	13,411	19,072	20,337	2,924
Totals, manufactured	$346,305	$23,472	$1,118,373	$5,285

*Included in "Other Manufactures."
†Included in "Pens of all kinds."
‡Included in "Wire and cables," etc.

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

January.

	1919.		1920.	
UNMANUFACTURED—	Pounds.	Value.	Pounds.	Value.
Crude rubber:				
From—				
Dutch East Indies	.....	.....	12,915	£152,410
French West Africa	.....	.....	337	3,241
Gold Coast	144	£1,601	123	1,413
Other African countries	4,437	46,182	824	8,306
East Africa (including Madagascar)	125	1,150	1,856	18,685
Peru	17	245	71	850
Brazil	18,206	213,843	9,461	108,639
British India	19,323	219,962	15,210	191,595
Straits Settlements	34,930	381,295	31,416	398,543
Federated Malay States	30,321	357,666	43,414	526,304
Ceylon and dependencies	26,035	304,272	49,144	593,765
Other Dutch possessions in Indian Seas	1,902	22,511	4,579	55,621
Other countries in East Indies and Pacific, not elsewhere specified	.....	.....	1,074	13,149
South and Central America (except Brazil and Peru)	51	547	476	5,830
Other countries	3,589	40,165	1,355	13,565
Totals	139,080	£1,589,439	172,255	£2,091,916
Waste and reclaimed rubber	7	£34	7,760	£20,637
Totals unmanufactured	139,087	£1,589,473	180,015	£2,112,553
Gutta percha and balata	27,965	£489,752	8,163	£119,233
*Rubber substitutes	.....	.....	4	£33

*Included in "Other Articles," Class III, T., prior to 1920.

January.

	1919.		1920.	
MANUFACTURED—	Pounds.	Value.	Pounds.	Value.
Boots and shoes..*dozen pairs*	311	£1,456	35,372	£69,772
Waterproofed clothing	.....	.....	.....	130
Tires and tubes	.....	15,924	.....	351,598
Other rubber manufactures	.....	21,951	.....	117,710
Insulated wire	.....	.....	.....	1,914
Totals	.....	£39,331	.....	£541,124

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber	3,161	£7,441	11,390	£25,676
Rubber substitutes	.....	7,591	.....	13,627
MANUFACTURED—				
Waterproofed clothing	.....	£70,141	.....	£258,819
Boots and shoes....*dozen pairs*	17,513	24,902	10,416	27,478
Insulated wire	.....	19,322	.....	112,574
Submarine cables	.....	21,531	.....	81,323
Tires and tubes	.....	287,414	.....	475,946
Other rubber manufactures	.....	240,055	.....	288,036
Totals	.....	£678,397	.....	£1,283,479

EXPORTS—COLONIAL AND FOREIGN.

UNMANUFACTURED—				
Crude rubber:				
To Russia	.....	.....	83	£1,280
Sweden, Norway and Denmark	1,702	£21,243	1,291	11,707
Germany	.....	.....	5,548	55,130
Belgium	.....	.....	4,840	53,581
France	23,241	266,052	23,615	280,450
Spain	22	301	316	3,812
Italy	18,539	208,874	3,059	33,668
Austria-Hungary	.....	.....	112	1,200
Other countries in Europe	10	231	1,877	19,136
United States	213	2,724	125,998	1,554,547
Canada	.....	.....	14,528	174,805
Other countries	556	8,758	2,391	30,935
Totals	44,283	£508,183	183,658	£2,220,251
Waste and reclaimed rubber	33	.....	125	.....
Gutta percha	11	225	1,234	21,190
MANUFACTURED—				
Boots and shoes...dozen pairs	1,297	2,268	609	4,359
Insulated wire	.....	280	.....	.....
Tires and tubes	.....	17,075	.....	2,464
Other manufactures	.....	5,132	.....	5,714
Totals	.....	£24,980	.....	£33,727

UNITED KINGDOM RUBBER STATISTICS.

IMPORTS.

Year Ended December 31.

	1918.		1919.	
UNMANUFACTURED—	Pounds.	Value.	Pounds.	Value.
Crude rubber:				
From—				
Dutch East Indies	78,055	£932,287	256,554	£2,667,911
French West Africa	3,041	25,559	639	5,538
Gold Coast	7,855	60,747	3,152	29,953
Other African countries	64,769	602,366	32,226	310,039
Peru	8,505	94,258	11,842	120,349
Brazil	95,509	1,201,943	181,214	1,997,385
British India	44,009	521,552	113,012	1,240,460
Straits Settlements	286,973	3,259,738	673,511	7,107,882
Federated Malay States	163,996	1,952,257	628,622	6,628,845
Ceylon and dependencies	271,730	3,172,601	334,981	3,605,033
Other countries	24,827	289,390	46,613	498,339
Totals	1,049,269	£12,112,698	2,282,366	£24,211,734
Waste and reclaimed rubber	2,417	2,961	49,924	135,611
Totals unmanufactured	1,051,686	£2,115,659	2,332,290	£24,347,395
Gutta percha	105,491	£1,973,587	110,790	£2,142,354
MANUFACTURED—				
Boots and shoes..*dozen pairs*	30,841	£241,029	170,610	£294,338
Waterproofed clothing	.....	22,117	.....	15,585
Automobile tires and tubes	.....	602,645	.....	2,053,423
Motorcycle tires and tubes	.....	15,573	.....	37,892
Bicycle tires and tubes	.....	20,414	.....	51,676
Carriage tires and tubes	.....	242	.....	5,998
Insulated wire	.....	2,220	.....	7,830
Submarine cables	.....	.....	.....	38
Totals	.....	£904,240	.....	£2,466,780

EXPORTS.

UNMANUFACTURED—				
Waste and reclaimed rubber	71,082	£183,858	104,548	£242,138
MANUFACTURED—				
Waterproof clothing	.....	478,788	.....	1,730,172
Boots and shoes..*dozen pairs*	89,069	124,400	130,864	262,373
Insulated wire	.....	90,088	.....	828,058
Bicycle tires and tubes	.....	260,554	.....	1,333,233
Carriage tires and tubes	.....	153,304	.....	246,790
Automobile tires and tubes	.....	1,163,623	.....	2,421,906
Motorcycle tires and tubes	.....	153,407	.....	260,151
Submarine cables	.....	577,998	.....	622,452
Other rubber manufactures	.....	1,483,035	.....	2,832,638
Totals	.....	£4,485,197	.....	£10,537,773

UNITED KINGDOM RUBBER STATISTICS—(Continued).
EXPORTS—COLONIAL AND FOREIGN.

	Year Ended December 31.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude Rubber:				
To Russia	.....	.....	1,687	£22,151
Belgium	.....	.....	84,173	710,955
France	222,877	£2,695,580	239,532	2,579,919
Italy	73,899	888,995	99,944	1,091,585
United States of America	58,701	680,351	638,635	6,779,508
Other Countries	20,810	262,289	265,948	2,819,457
Totals	376,287	£4,527,215	1,329,919	£14,003,575
Waste and Reclaimed	798	2,825	4,455	17,382
Total, unmanufactured	377,085	£4,530,040	1,334,374	£14,020,957
Gutta percha	2,478	43,697	14,005	215,775
MANUFACTURED—				
Boots and shoes..*dozen pair*	893	£4,257	4,871	£10,195
Waterproof clothing	.....	121	.....	1,188
Insulated wire	.....	3,224	.....	7,905
Automobile tires and tubes	.....	56,522	.....	111,233
Motorcycle tires and tubes	.....	897	.....	7,276
Bicycle tires and tubes	.....	9,291	.....	5,243
Carriage tires and tubes	.....	1,639	.....	1,495
Totals	.....	£75,951	.....	£144,535

THE MARKET FOR RUBBER SCRAP.

NEW YORK.

EARLY IN THE MONTH the rubber scrap market labored under adverse conditions such as shipping difficulties and lack of interest on the part of reclaimers in anticipation of lower prices incident to the spring collections of tires and shoes. Already there is a decreasing firmness noted in the prices asked for both these grades.

The crude rubber market has been quiet and there has been no beneficial effect on scrap rubber. Consumers of scrap are favoring the scrap at present which is a good thing for the trade in view of the tremendous supplies in that line.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

March 25, 1920.

Prices subject to change without notice.

BOOTS AND SHOES:			
Arctic tops	*lb.*	$0.01 @	
Boots and shoes	*lb.*	.07⅞ @	.08⅛
Trimmed arctics	*lb.*	.05½ @	.05¾
Untrimmed arctics	*lb.*	.06½ @	.06¾
HARD RUBBER:			
Battery jars, black compound	*lb.*	.01 @	
No. 1, bright fracture	*lb.*	.23 @	.24
INNER TUBES:			
No. 1	*lb.*	.17½ @	.17¾
Compounded	*lb.*	.09⅞ @	.10
Red	*lb.*	.08½ @	.08¾
MECHANICALS:			
Black scrap, mixed, No. 1	*lb.*	.03½ @	.04
No. 2	*lb.*	.03 @	
Car springs	*lb.*	.03½ @	.04
Heels	*lb.*	.03 @	.03½
Horse-shoe pads	*lb.*	.03 @	.03½
Hose, air brake	*lb.*	.04¼ @	
fire, cotton lined	*lb.*	.01¼ @	.01¾
garden	*lb.*	.01½ @	.01¾
Insulated wire stripping, free from fiber	*lb.*	.03½ @	.04
Matting	*lb.*	.01½ @	.01½
Red packing	*lb.*	.05½ @	.06
Red scrap, No. 1	*lb.*	.09 @	.10
No. 2	*lb.*	.06¾ @	.07¼
White scrap No. 2	*lb.*	.08 @	.09
No. 1	*lb.*	.10 @	.11
TIRES:			
PNEUMATIC—			
Auto peelings	*lb.*	.04½ @	.05
Bicycle	*lb.*	.02¾ @	.03
Standard white auto	*lb.*	.04⅝ @	.04¾
Standard mixed auto	*lb.*	.03¾ @	
Stripped, unguaranteed	*lb.*	.02½ @	.02¾
White, G. & G., M. & W., and U. S.	*lb.*	.04¾ @	.05
SOLID—			
Carriage	*lb.*	.04 @	.04¼
Irony	*lb.*	.01 @	
Truck	*lb.*	.03½ @	.03¾

THE MARKET FOR COTTON AND OTHER FABRICS.

NEW YORK.

AMERICAN COTTON. The market for cotton has continued to be remarkably dull, sales being recorded on two days only. The spot price for middling uplands cotton was 40 cents on March 1, it rose gradually through the next ten days to 41 cents and stayed at that price without variation and with no sales for nearly two weeks; at the end of the month there were fluctuations, the price going to 43.25 cents on March 23, and dropping again to 42 cents, the price quoted March 24. The boll weevil is apparently spreading throughout the South. The English threat of ceasing to purchase American cotton has not been taken seriously on either side of the Atlantic.

EGYPTIAN COTTON. During February the Alexandria market fluctuated violently, owing to speculation, largely among the native merchants. The prices were so high that export houses ceased to deal in futures. They are believed to have practically filled all their contracts. The actual sales have been very small and the spot market dull, Sakellarides bringing $3 to $4 above the future price toward the end, though $8 to $10 more was paid for it in the middle of the month. The extreme future prices reached for March delivery were $198 and $165 per cantar, the last quotation being $181.50 for March and $140 for November. There is no doubt that there is a shortage of Sakellarides that can be delivered and spinners and exporters are holding off until the market settles.

During the last week of March it was reported that Sakellarides has recovered, after the recent decline, and is holding firm in Alexandria at $1.37 for the better grades. This growth still remains dear with a high basis over contracts, but uppers and brown cottons are neglected.

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
407 Peoples Savings & Trust
Co. Building.

Arizona Cotton. This year's crop of Pima has all been sold with the exception of a limited number of bales of very low grade cotton of indifferent staple. The last prices were around $1.05. Seventy cents a pound has been bid in Arizona for new crop cotton without bringing any response. New crop has been offered in the East at $1.02 with like results. Reports from Phoenix indicate a somewhat increased acreage for next season and optimists are predicting a 50,000 bale crop.

Sea Island Cotton. Price for average extra choice is now $1.10 with very little cotton offered. It is probable that there will be sufficient demand between now and new crop to absorb practically all of the stock on hand. This means no carry-over into next season. A very small acreage will be planted next year in South Carolina, Georgia and Florida to Sea Island cotton. Probably the crop will not amount to more than 9,000 bales.

Ducks and Drills. The market continues firm, the demand being much greater than the supply, as will continue to be the case so long as there is a scarcity in the raw material. The high prices continue to be quoted without a notable change.

Raincoat Cloth. The trade has been rather quiet as manufacturers have enough stock on hand to keep them going for some months to come. Prices have advanced, however, because large gray goods operators are buying heavily, both spot and futures.

Sheetings. After a lull of some weeks buying has started again and the buyers are finding that goods for near delivery are scarce. All the mills are busy and have orders for all they can do comfortably for some time to come.

Tire Fabrics. The market for tire fabrics is practically at a standstill, as there are no goods for sale and none are to be had for from four to six months from now. What sales occur are only of odd lots. No dealers are covering 1921 owing to the high prices demanded. The yarn manufacturers ask exorbitant prices and the fabric manufacturers who buy their goods must add these prices to their own.

NEW YORK QUOTATIONS.

March 25, 1920.

Prices subject to change without notice.

ASBESTOS CLOTH:			
Brake lining, 2½ lbs. sq. yd., brass or copper insertion	*lb.*	$1.00 @	1.10
2¾ lbs. sq. yd., brass or copper insertion	*lb.*	1.10 @	1.15
BURLAPS:			
32—7-ounce	*100 yards*	@	
32—8-ounce		@	
40—7½-ounce		10.50 @	
40—8-ounce		10.75 @	
40—10-ounce		15.25 @	
40—10½-ounce		15.50 @	
45—7½-ounce		15.25 @	
45—8-ounce		15.50 @	
48—10-ounce		19.00 @	
DRILLS:			
38-inch 2.00-yard	*yard*	.41 @	
40-inch 2.47-yard		.34½ @	
52-inch 1.90-yard		.55¼ @	
52-inch 1.95-yard		.53⅞ @	
60-inch 1.52-yard		.75¾ @	
DUCK:			
CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	*yard*	.45 @	
38-inch 1.74-yard		.52⅞ @	
72-inch 16.66-ounce		1.25 @	
72-inch 17.21-ounce		1.34 @	
MECHANICAL:			
Hose	*pound*	.76 @	
Belting		.76 @	
HOLLANDS, 40-INCH:			
Acme	*yard*	@	
Endurance		@	
Penn		@	
OSNABURGS:			
40-inch 2.35-yard	*yard*	.35 @	
40-inch 2.48-yard		.33⅛ @	
37½-inch 2.42-yard		.34 @	
RAINCOAT FABRICS:			
COTTON:			
Bombazine 64 x 60	*yard*	.30 @	
60 x 48		.27 @	
Cashmeres, cotton and wool, 36-inch, tan		1.15 @	
Twills 64 x 72		.46 @	
64 x 102		.48 @	
Twill, mercerized, 36-inch, blue and black		.62½ @	
tan and olive		.60 @	
Tweed		.90 @	1.50
printed		.27½ @	
Plaids 60 x 48		.28½ @	
56 x 44		.27 @	
Repp		.45 @	.50
Surface prints 60 x 48		.29½ @	
64 x 60		.32 @	
IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING—PLAIN AND FANCIES:			
63-inch, 3¼ to 7½ ounces	*yard*	1.45 @	3.90
36-inch, 2¾ to 5 ounces		.85 @	2.25
IMPORTED PLAID LINING (UNION AND COTTON:)			
63-inch, 2 to 4 ounces	*yard*	.95 @	1.90
36-inch, 2 to 4 ounces		.60 @	1.15
DOMESTIC WORSTED FABRICS:			
36-inch, 4½ to 8 ounces	*yard*	.85 @	1.90
DOMESTIC WOVEN AND PLAID LININGS (COTTON):			
36-inch, 3¼ to 5 ounces		.27 @	.35
SHEETINGS, 40-INCH:			
48 x 48, 2.35-yard	*yard*	.37½ @	
48 x 48, 2.50-yard		.35 @	
48 x 48, 2.70-yard		.32½ @	
48 x 48, 2.85-yard		.32 @	
64 x 68, 3.15-yard		.33 @	
56 x 60, 3.60-yard		.29½ @	
48 x 44, 3.75-yard		.27 @	
SILKS:			
Canton, 38-inch	*yard*	.75 @	
Schappe, 36-inch		1.00 @	
STOCKINETTES:			
SINGLE THREAD:			
3½ Peeler, carded	*pound*	@	
4½ Peeler, carded		1.15 @	1.15¼
6¾ Peeler, combed		1.80 @	
DOUBLE THREAD:			
Zero Peeler, carded	*pound*	.98 @	.98½
3½ Feeler, carded		1.04 @	1.04½
6½ Peeler, combed		2.70¼ @	2.70½
TIRE FABRICS:			
BUILDING:			
17½-ounce Sakellarides, combed	*pound*	2.50 @	2.75
17¼-ounce Egyptian, combed		2.40 @	2.69
17¼-ounce Egyptian, carded		2.30 @	2.50
17¼-ounce Peelers, combed		2.30 @	2.50
17¼-ounce Peelers, carded		1.60 @	1.75
CHAFER:			
9¼-ounce Sea Island	*pound*	3.00 @	
9¼-ounce Egyptian, carded		2.50 @	
9¼-ounce Peeler, carded		1.50 @	1.60

SEA ISLAND CROP MOVEMENT.

From August 1, 1919, to February 27, 1920.

	Receipts. 1919-20.	1918-19.
Stock on hand, August 1, 1920—		
Savannah, 4,901; Charleston, 90 *bales*	4,991	15,764
Received at Savannah (gross)	10,553	10,722
Received at Charleston	2,981	8,639
Received at Jacksonville	10,309	8,659
Received at Brunswick	.....	.....
Received at Norfolk	.....	.....
Total	28,834	43,784
Less exports	24,504	31,003
Stock February 27, 1920—		
Savannah, 3,448; Charleston, 882	4,330	12,781
Crop in sight at all ports to date	23,383	28,020

EXPORTS.

From—	To Great Britain.	Continent.	North Mills.	South Mills.	Totals.
Savannah	...	443	9,823	1,740	12,006
Charleston	...	.....	2,189	.....	2,189
Jacksonville	...	.....	10,309	.....	10,309
Brunswick	...	.....	.....	.....	.....
Norfolk	...	.....	.....	.....	.....
Total	...	443	22,321	1,740	24,504
1918-19	370	.....	29,905	728	31,003
	*370	†443	*7,584	†1,012	*6.499

*Decrease. †Increase.

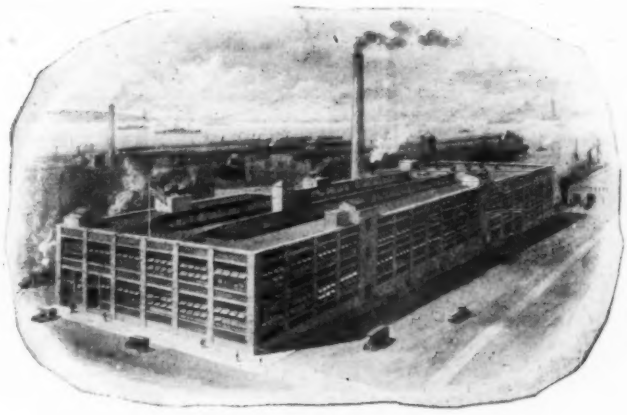
(Compiled by John Malloch & Co., Savannah, Georgia.)

VULCAN

Offset Blankets

Piano Player Cloths

Auto Top Fabrics



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WHITING

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Intermediates Department

NATIONAL ANILINE & CHEMICAL COMPANY,

Incorporated

General Offices

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AKRON CINCINNATI CHICAGO

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1919, TO JANUARY 21, 1920.

	1919-1920.	1918-1919.	1917-1918.
To Liverpool ..... bales	186,320	142,184	120,198
Manchester	111,382	71,836	83,799
Other United Kingdom ports.....	145	5,537	19,542
Total shipments to Great Britain.....	297,847	219,557	223,539
To France	31,992	6,679	10,309
Spain	5,730	10,140	1,484
Italy	14,648	25,587	17,946
Belgium	21	.....	.....
Switzerland	8,488	7,323	.....
Holland	566	.....	.....
Portugal	460	.....	.....
Germany	240	.....	.....
Austria	7,678	.....	.....
Greece	104	3,713	500
Turkey and other countries.....	73	.....	.....
Total shipments to Continent.....	70,409	53,442	30,239
To United States	182,591	11,792	13,530
Japan	13,724	7,903	12,464
Total shipments to all parts.....	564,571	292,694	279,772
Total crop (interior gross weight), cantars[1]		4,826,342	6,315,841

[1]One cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE ACTIVE DEMAND and short supply which characterizes practically the entire list of rubber workers' chemicals and compounding ingredients has resulted in a sellers' market greatly to the disadvantage of the consumers.

In some lines producers complain that consumers are yielding to the short supply condition and are ordering beyond their requirements which forces producers to cut down requisitions or to raise prices.

Lead pigments have advanced owing to condition of the pig lead prices. Relief can come only with increased output of the metal, and is expected shortly.

The condition of the rubber trade as regards the supply of hexamethylene-tetramine, the popular organic accelerator, is one of acute shortage. The material is widely distributed to users in very limited amounts and at extraordinarily high figures, as high as $3 per pound being paid. Deliveries on contract business are made at prices current at the date of shipment. The restricted output is attributable to the short supply of formaldehyde and wood alcohol.

ANILINE OIL. Stocks are small and prices firm, tending upward.

BARYTES. The stock shortage seems to be contingent on car shortage which is not susceptible to rapid improvement. Other production difficulties are apparently being eliminated.

BENZOL. Makers are able to supply the bulk of the demand which is fairly heavy. Prices are easier, 90 per cent is quoted 25 cents per gallon.

BLACKS. The situation with regard to both lampblack and carbon black is acute. The supply is not equal to the demands of consumers. It is reported that rubber manufacturers have been forced to substitute graphite wherever possible.

DRY COLORS. Imported earth colors are somewhat scarce. Interest centers in the volume of European shipments, particularly from Germany.

LITHARGE. The demand is very active and supplies insufficient. A rise of one-half cent per pound was made about the middle of the month.

LITHOPONE. Output is booked months ahead. Spot stocks are very small. Producers are not contracting and prices have been advanced to eight cents for car lot.

SUBLIMED LEAD. As with other lead pigments, the supply is inadequate to the demand. Early in the month an advance of ¾-cent per pound took effect. Producers are endeavoring to stabilize prices which are dependent on that for pig lead which has continued to rule high.

SULPHUR. The demand is steady at firm prices.

WHITING. Stocks are low and receipts of chalk not satisfactory.

ZINC OXIDE. There is a vigorous demand at firm prices.

NEW YORK QUOTATIONS.

MARCH 25, 1920.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.			
Accelerene, New York	lb.	$4.75 @	
Accelemal	lb.	.55 @	.57½
Aldehyde ammonia crystals	lb.	1.90 @	2.00
Aniline oil	lb.	.34 @	.36
Excellerex	lb.	.65 @	.75
Hexamethylene tetramine (powdered)	lb.	1.90 @	2.00
N. C. C.	lb.	.50 @	
No. 999	lb.	22½ @	
Paraphenylenediamine	lb.	2.50 @	3.00
Thiocarbanilide	lb.	.55 @	.75
Velosan	lb.	3.00 @	3.10
ACCELERATORS, INORGANIC.			
Lead, dry red (bbls.)	lb.	.12¼ @	
sublimed blue (bbls.)	lb.	.10 @	
sublimed white (bbls.)	lb.	.10 @	
white, basic carbonate (bbls.)	lb.	.10½ @	
Lime, flour	lb.	.02½ @	.02½
Litharge, domestic	lb.	.11¾ @	
sublimed	lb.	.12 @	
imported	lb.	.11½ @	.12½
Magnesium, carbonate, light technical	lb.	.12 @	0.13
oxide, calcined light	lb.	.65 @	0.70
calcined medium light	lb.	.25 @	0.30
calcined heavy	lb.	.07½ @	0.09
calcined commercial (magnesite)	lb.	.04 @	0.05
ACIDS.			
Acetic, 28 per cent (bbls.)	cwt.	2.75 @	3.00
glacial, 99 per cent (carboys)	cwt.	12.00 @	12.50
Cresylic (97% straw color) (drums)	gal.	.95 @	
(95% dark) (drums)	gal.	.85 @	
Muriatic, 20 degrees	cwt.	1.75 @	2.00
Nitric, 36 degrees	cwt.	6.00 @	6.50
Sulphuric, 66 degrees	ton	22.00 @	
ALKALIES.			
Caustic soda, 76 per cent (bbls.)	lb.	.06 @	.07
Soda ash (bbls.)	lb.	.03¼ @	
COLORS.			
Black:			
Bone, powdered	lb.	.06 @	.12
granulated	lb.	.11 @	
Carbon black (sacks, factory)	lb.	.12 @	.25
Drop	lb.	.05½ @	.15
Ivory black	lb.	.16 @	.30
Lamplack	lb.	.15 @	.45
Oil soluble aniline	lb.	1.25 @	
Rubber black	lb.	.08½ @	
Blue:			
Cobalt	lb.	.25 @	.30
Prussian	lb.	.90 @	
Ultramarine	lb.	.18 @	.40
Brown:			
Iron oxide	lb.	.04 @	.06
Sienna, Italian, raw and burnt	lb.	.05½ @	.15
Umber, Turkey, raw and burnt	lb.	.05½ @	.08
Vandyke	lb.	.10 @	.15
Green:			
Chrome, light	lb.	.39 @	.50
medium	lb.	.40 @	.50
dark	lb.	.60 @	
commercial	lb.	.15 @	
Oxide of chromium (casks)	lb.	.90 @	
Red:			
Antimony, crimson, sulphuret of (casks)	lb.	.40 @	
crimson, "Mephisto" (casks)	lb.	.60 @	
crimson, "R. M. P."	lb.	.60 @	
Antimony, golden sulphuret of (casks)	lb.	.25 @	.35
golden sulphuret (States)	lb.	.30 @	.35
golden, "Mephisto" (casks)	lb.	.33 @	
golden, "R. M. P."	lb.	.33 @	
red sulphuret (States)	lb.	—— @ ——	
vermilion sulphuret	lb.	.55 @	
Arsenic, red sulphide	lb.	.18 @	
Indian	lb.	.10 @	.15
Red excelsior	lb.	.12 @	.14
Toluidine toner	lb.	3.75 @	
Iron oxide, reduced grades	lb.	.04¼ @	.12
pure bright	lb.	.15 @	.18
Spanish bright	lb.	.04¼ @	.07
Venetian	lb.	.02 @	.06
Oil soluble aniline, red	lb.	2.00 @	
orange	lb.	1.75 @	
Oxiomony	lb.	.18 @	
Vermilion, American	lb.	.25 @	.30
artificial	lb.	35 @	
English quicksilver	lb.	1.60 @	1.65

White:

Aluminum bronze, C. P.	lb.	$0.65	@	
superior	lb.	.69	@	
Lithopone, domestic	lb.	.07¾	@	.09
Ponolith (carloads, factory)	lb.		—@—	
Rubber-makers' white	lb.	.11¼	@	
Zinc oxide, Horsehead (less carload, factory):				
"XX red"	lb.	.09½	@	.11
"Special"	lb.	.11½	@	
French process, red seal	lb.	.11¼	@	.11¾
green seal	lb.	.12¼	@	.12¾
white seal	lb.	.13½	@	.13¾
(States)	lb.		—@—	
Azo, ZZZ, lead free (carload factory)	lb.	.09½	@	.10
ZZ, under 5% leaded (carload factory)	lb.	.09	@	.09½
Z, 8-10% leaded (carload factory)	lb.	.08¼	@	.08¾

Yellow:

Cadmium, sulphide, yellow, light, orange	lb.	2.00	@	
red	lb.	1.85	@	
Chrome, light and medium	lb.	.30	@	
Ochre, domestic	lb.	.03	@	.07
imported	lb.	.05	@	.07½
Oil, soluble aniline	lb.	2.00	@	
Zinc chromate	lb.	.40	@	

COMPOUNDING INGREDIENTS.

Aluminum flake (f. o. b. New York)	ton	40.00	@	43.50
silicate	ton	25.00	@	35.00
Ammonia carbonate, powdered	lb.	.17¾	@	
Asbestine (carloads)	ton	30.00	@	
Asbestos (bags)	ton		—@—	
Barium, carbonate, precipitated	ton	85.00	@	
sulphide, precipitated	lb.	.05	@	
dust	ton	95.00	@	
Barytes, pure white	ton	35.00	@	40.00
Barytes, off color	ton	22.50	@	
Basofor	lb.	.05	@	
Blanc fixe	lb.	.05	@	
Bone ash	lb.	.10	@	
Carrara filler	ton	25.00	@	35.00
Chalk, precipitated, extra light	lb.	.05	@	.05½
heavy	lb.	.04	@	.04½
Blue Ridge	ton	20.00	@	
China clay, Dixie	ton	20.00	@	
domestic	ton	18.50	@	20.00
imported	lb.	.03	@	.05
Shawnee	ton	20.00	@	
Cotton linters, clean mill run, f. o. b. factory	lb.	.03½	@	
Fossil flour (powdered)	ton	65.00	@	70.00
(bolted)	ton	75.00	@	80.00
Diatomite	lb.	.03	@	.04
Glue, high grade	lb.	.35	@	.40
medium	lb.	.30	@	.35
low grade	lb.	.20	@	.25
Graphite, flake (400-pound bbl.)	lb.	.10	@	.30
amorphous	lb.	.04	@	.08
Ground glass FF. (bbls.)	lb.	.03	@	
Infusorial earth (powdered)	ton	65.00	@	70.00
(bolted)	ton	75.00	@	80.00
Liquid rubber	lb.	.18	@	
Mica, powdered	lb.	.08½	@	.09
Pumice stone, powdered (bbl.)	lb.	.05	@	
Rotten stone, powdered	lb.	.02¼	@	.04½
Rubber paste	lb.	.18	@	.22
Rub-R-Glu	lb.		—@—	
Silex (silica)	ton	30.00	@	40.00
Starch, powdered corn (carload, bbls.)	cwt.	5.34	@	
(carload, bags)	cwt.	5.12	@	
Talc, powdered soapstone	ton	20.00	@	25.00
Terra blanche	ton	25.00	@	30.00
Tripoli earth, air-floated	ton	50.00	@	
White	ton	52.50	@	
Tyre-lith	ton	85.00	@	
Whiting, Alba (carloads)	cwt.	.80	@	.90
Columbia	cwt.	.80	@	
commercial	cwt.	1.50	@	
English cliffstone	cwt.	2.00	@	
gilders	cwt.	1.60	@	
Paris, white, American	cwt.	1.75	@	
Quaker	ton	16.00	@	
Super	ton	30.00	@	32.50
Wood pulp, imported	lb.	.03¾	@	
XXX	ton	80.00	@	
X	ton	60.00	@	
Wood flour, American	lb.	.02	@	

MINERAL RUBBER.

Elateron	ton	60.00	@	63.00
Gilsonite	ton	60.00	@	65.00
Genasco (carloads, factory)	ton	60.00	@	
(less carloads, factory)	ton	62.00	@	
Hard hydrocarbon	ton	35.00	@	
K-X	ton	130.00	@	
K. M. R.	ton	45.00	@	90.00
M. R. X.	ton	100.00	@	
Pioneer, carload, factory	ton	50.00	@	
less carload, factory	ton	55.00	@	
Raven M. R.	ton	$50.00	@	70 00
Refined Elaterite	ton	175.00	@	
Richmond	ton	75.00	@	
No. 64	ton	44.00	@	
318/320 M. P. hydrocarbon	ton	50.00	@	
Robertson, M. R. Special (carloads, factory)	ton	80.00	@	
M. R. (carloads, factory)	ton	57.50	@	
M. R. (less car loads factory)	ton	60.00	@	
Walpole rubber flux (factory)	lb.	.05	@	

OILS.

Avoilas compound	lb.	.16	@	.18
Castor, No. 1, U. S. P.	lb.	.21	@	
No. 3, U. S. P.	lb.	.20	@	
Corn, refined Argo	cwt.	20.56	@	
Cotton	lb.	.19	@	
Glycerine (98 per cent)	lb.	.23½	@	.24
Glycerole	lb.	.55	@	
Linseed, raw (carloads)	gal.	1.77	@	
Linseed compound	gal.	.85	@	
Palm (Lagos)	lb.	.17	@	.20
Peanut	lb.	.26	@	
Petrolatum	lb.	.09	@	
Petroleum grease	lb.	.07½	@	
Pine, steam distilled	gal.	1.65	@	
Rapeseed, refined	lb.	.22	@	
blown	lb.	.22½	@	
Rosin	gal.	.70	@	.95
Soya bean	lb.	.19	@	
Tar	gal.	.38	@	.42

RESINS AND PITCHES.

Balsam, fir	gal.	2.00	@	
Cantella gum	lb.	.55	@	
Tar, retort	bbl.	15.25	@	15.50
kiln	bbl.	15.00	@	
Pitch, Burgundy	lb.	.08¾	@	
coal tar	lb.	.01¼	@	
pine tar	lb.	.04	@	
ponto	lb.	.14	@	
Rosin	bbl.	16.95	@	21.75
granulated	lb.		None	
fused			None	
Rosin, K	bbl.	20.00	@	
strained	bbl.	18.00	@	
Shellac, fine orange	lb.	1.55	@	1.65

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.16	@	
methyl (drums)	gal.	1.35	@	
Benzol, water white	gal.	.25	@	.30½
Beta-naphthol, resublimed	lb.	1.05	@	1.10
ordinary grade	lb.	.53	@	
Carbon bisulphide (drums)	lb.	.06	@	.08
tetrachloride (drums)	lb.	.11	@	.13
Naphtha, motor gasoline (steel bbls.)	gal.	.28½	@	
72 @ 76 degrees (steel bbls.)	gal.	38¼	@	
70 @ 72 (steel bbls.)	gal.	.36½	@	
68 @ 70 degrees (steel bbls.)	gal.	.35½	@	
V. M. & P. (steel bbls.)	gal.	.27½	@	
Toluol, pure	gal.	.28	@	.33½
Turpentine, spirits	gal.	2.16	@	2.36
wood	gal.	1.60	@	
Oamaco reducer	gal.	.40	@	
Xylol, pure	gal.	.40	@	.45
commercial	gal.	.35	@	.40

SUBSTITUTES.

Black	lb.	.10	@	.22
White	lb.	.10	@	.24
Brown	lb.	.15	@	.23
Brown factice	lb.	.12	@	.23
White factice	lb.	.13	@	.25
Paragol, soft and medium (carloads)	cwt.	18.58	@	
hard	cwt.	18.08	@	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.39	@	
Orange mineral, domestic	lb.	.15¼	@	
Sulphur chloride (drums)	lb.	.07	@	
Sulphur, flour, Brooklyn brand (carloads)	cwt.	3.40	@	
Bergenport brand (carloads)	cwt.	3.40	@	
superfine (carloads, factory)	cwt.	2.00	@	
R. M. "Soft" l. c. l.		.04	@	.04½
R. M. "Superfine" l. c. l.		.03¼	@	.03½

(See also Colors—Antimony.)

WAXES.

Wax, beeswax, white	lb.	.66	@	68
ceresin, white	lb.	.15	@	.16
carnauba	lb.	.46	@	.90
ozokerite, black	lb.	.60	@	.65
green	lb.	.75	@	.80
Montan	lb.	.20	@	.32
paraffine, refined 118/120 m. p. (cases)	lb.	.10½	@	
123/125 m. p. (cases)	lb.	.11	@	
128/130 m. p. (cases)	lb.	.12½	@	

INDIA RUBBER WORLD
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CAOUTCHOUC GUTTA-PERCHA

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